MIXER MODE *(version 2.00)*

TOA

OPERATING INSTRUCTIONS

9000 SERIES AMPLIFIERS

M-9000
A-9060DH
A-9120DH
A-9120DL
A-9060S
A-9120S
A-9240SH

This manual is intended for those who use the 9000 Series Amplifier in the Mixer mode.
For use in the Matrix mode, please read the separate instruction manual for the Matrix mode.

Thank you for purchasing TOA's 9000 series Amplifier.
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

TOA Corporation

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1. IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

FCC REQUIREMENTS

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

2. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this manual handy for future reference.

Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety hazards.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operation and maintenance (servicing) instruction in the literature accompanying the appliance.

⚠ WARNING Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.
- Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down and causing personal injury and/or property damage.
- External wiring connected to the terminals marked with ϟ requires installation by an instructed person.
- The apparatus shall be connected to a mains socket outlet with a protective earthing connection.
- The socket-outlet shall be installed near the equipment and the plug shall be easily accessible.
- Use the supplied rack mounting bracket when mounting the unit in an equipment rack. Remove four M4 x 8 screws on both sides of the unit, and mount the bracket there using the supplied M4 x 16 screws instead.

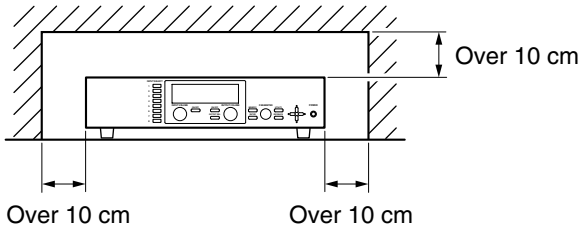
When the Unit is in Use

- Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
  - If you detect smoke or a strange smell coming from the unit
  - If water or any metallic object gets into the unit
  - If the unit falls, or the unit case breaks
  - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to your nearest TOA dealer.
- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.

⚠ CAUTION Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- Do not block the ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
- To avoid electric shocks, be sure to unplug the unit's power supply cord when connecting speakers.
- Be sure to follow the instructions below when rack-mounting the unit. Failure to do so may cause a fire or personal injury.
  - Install the equipment rack on a stable, hard floor. Fix it with anchor bolts or take other arrangements to prevent it from falling down.
  - When connecting the unit's power cord to an AC outlet, use the AC outlet with current capacity allowable to the unit.
  - No rack-mounting screws are supplied with the unit. Separately prepare the appropriate screws for the rack.
- Keep the 9000 series amplifiers over 10 cm away from objects that may obstruct air flow to prevent the unit's internal temperature rise.



When the Unit is in Use

- Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction, which in turn can cause heat to generate and result in a fire.
- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.

An all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.

The lighting flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

⚠ ATTENTION

L'appareil ne doit pas être exposé aux éclaboussures ou écoulements et tous objets remplis de liquide, tels que vases, ne doivent pas être sur l'appareil.

3. GENERAL DESCRIPTION

TOA's 9000 Series Amplifiers are Matrix Mixers designed to be used in conjunction with optional modules and can be configured for up to 8 inputs and 8 outputs. Usable modules include 5 types of 9000 series plug-in modules, D-001T (2-channel input), T-001T (Audio output expansion), C-001T (Control I/O expansion), ZP-001T (Zone paging), and AN-001T (Ambient noise sensor), as well as 900 series input modules. The most appropriate modules can be selected depending on applications.

By changing operation mode, the 9000 Series Amplifier can be used either as a matrix system suited to BGM or paging broadcasts, or as a mixer that is appropriate for speech or sound reinforcement applications. It is equipped with signal processing and control functions, permitting all parameters to be set at the amplifier. Further, settings data can be stored inside the amplifier and called up using the keys on the front panel.

The M-9000 is a Matrix Mixer Amplifier featuring the above matrix mixer function.
Besides the M-9000's matrix mixer function, the following A-9000 Series Amplifiers come with power amplifiers, out of which A-9060DH, A-9120DH, and A-9120DL can perform 2-channel or stereo broadcast in stand-alone operation.

A-9060DH: 60 W (70 V output) x 2
A-9120DH: 120 W (70 V output) x 2
A-9120DL: 120 W (4 Ω output) x 2
A-9060S: 60 W x 1
A-9120S: 120 W x 1
A-9240SH: 240 W (70 V output) x 1

4. FEATURES

- Either matrix or mixer mode can be selected depending on application for optimum operation.
- Matrix mode is suitable for BGM broadcasts or paging to zoned areas.
- Mixer mode is suitable for speech or sound reinforcement in such applications as hotel meeting rooms, churches or conference rooms.
- Eight module slots enable audio input and output configuration ranging from 1 input and 1 output to 8 inputs and 8 outputs.
- All settings can be performed at the unit using the built-in vacuum fluorescent display (VFD), setting keys and Parameter setting knob on the front panel.
- Up to 32 settings can be stored as Event memory (in matrix mode) or as Scene memory (in mixer mode), which can be recalled by the unit or external connected equipment.
- An RS-232C port permits remote control of the unit using an AMX*1 or Crestron*2 controller, or similar external equipment.
- A key lock function prevents accidental changes of front panel key or knob operation.
- Volume adjustment, paging initiation, and BGM program selection can be easily remote-controlled. The optional C-001T module permits the number of control inputs and outputs to be increased.
- Paging calls can be performed by a PABX (extension telephone) with the use of the optional ZP-001T Zone Paging module.
- With the use of the optional AN-001T Ambient Noise Sensor Input module and AN-9001 Ceiling Mount Microphone, the amplifier's output volume can be automatically adjusted in response to the change in ambient noise level.
- Three operation methods are available in Matrix mode; Normal matrix operation, 1-channel output operation, and 2-channel output operation. Depending on the 9000 Series amplifier model and built-in modules, you can select either 1-channel output operation method that permits audio signals to be output only at the output channel 1, or 2-channel operation method that permits BGM broadcasts to be output at the output channel 1 and priority broadcasts at the output channel 2.
  Moreover, with the use of the optional ZP-001T and SS-9001 Speaker Selector, 1-channel or 2-channel broadcast can be made to 4 zones.
- The optional ZM-9001 Zone Manager adds 6 control inputs, while the optional ZM-9002 Zone Manager adds 4 control inputs and 1 volume control.
- A ducker function*3 permits paging calls to be made without interrupting BGM broadcasts when in matrix mode.
- Because an auto-mixing function (ducker function*3 and NOM attenuation function*4) is available when in mixer mode, the output gain can be automatically adjusted.

*1 AMX is a trademark of AMX Corporation.

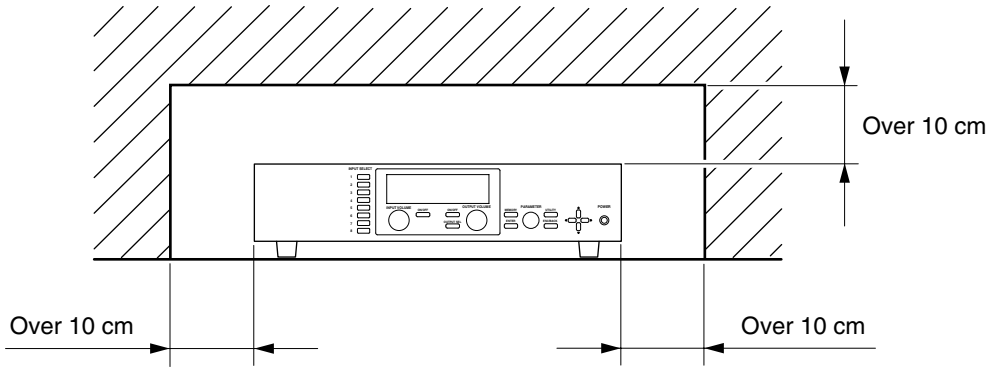
*2 Crestron is a trademark of Crestron Electronics, Inc.

*3 The Ducker function automatically attenuates input signals with lower priority when two or more audio signals are simultaneously received.

*4 The NOM (Number of Open Microphones) attenuation function automatically adjusts the output channel gain depending on the number of open microphones.

5. INSTALLATION PRECAUTIONS

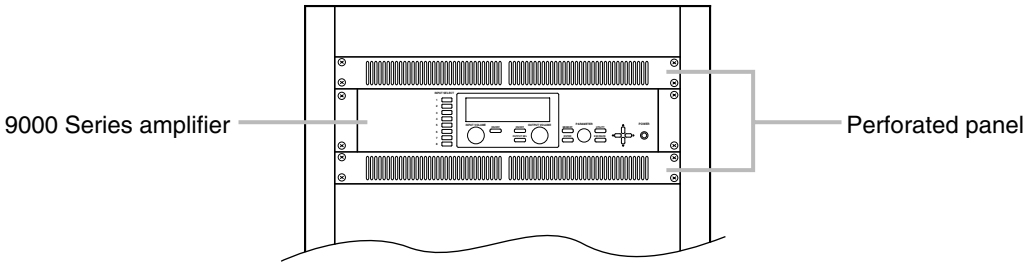
• Keep the 9000 Series Amplifiers except the M-9000 over 10 cm away from objects that may obstruct air flow to prevent the unit's internal temperature rise.



• When mounting the unit on an equipment rack

· Use the supplied rack-mounting bracket. (For the bracket attachment, refer to p. 104 "RACK MOUNTING BRACKET ATTACHMENT.")

· Have the unit well-ventilated, and be sure to mount a 1U or more size perforated panel above and below the unit to prevent the unit's internal temperature rise.



6. HANDLING PRECAUTIONS

• The supplied power supply cord is designed for exclusive use with this unit. Never use it with other equipment.

• Use the unit in locations where the temperature is between –10 and +40 °C (no condensation should be formed), and the humidity is less than 80%.

• The unit is a precision audio component. To prevent failure, avoid locations where it may be exposed to strong shocks or vibrations.

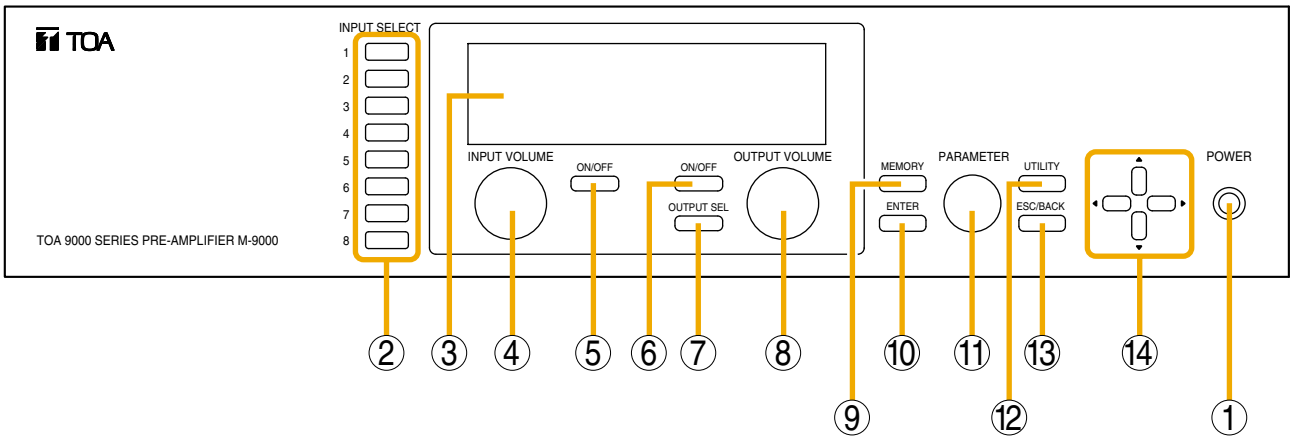
• To clean, be sure to first disconnect the power supply plug from the AC outlet, then wipe with a dry cloth. When extremely dirty, use a soft cloth dampened in neutral detergent. Never use benzene, thinner, alcohol or chemically-treated towels, which may damage the unit's finish.

7. NOMENCLATURE AND FUNCTIONS

7.1. M-9000 (Matrix Mixer Amplifier), A-9060DH/9120DH/9120DL/9060S/9120S/9240SH (Matrix Mixer Power Amplifiers)

[Front]

This figure represents the M-9000.



1. Power switch and Power indicator
Press this switch to turn on the power. The power indicator lights. To turn off the power, hold down the switch for at least 0.5 second.

Note
The power switch is a soft-switch, so the internal microcomputer is still operating even when the power switch is set to OFF.

2. Input channel selection keys
Select the input channel for which the volume is adjusted or parameter is set.
Pressing the key causes the corresponding red channel indicator to light on the vacuum fluorescent display (VFD).

3. Vacuum fluorescent display (VFD)
Displays the setting screen, input and output selection status, channel ON/OFF status, input and output level meter indication, and fader position.
(Refer to p. 13 "VFD on-screen indications.")

4. Input volume control
Adjusts the gain of the input channel selected with the input channel selection key (2).

5. Input channel ON/OFF key
Turns on or off the channel selected with the input channel selection key (2).

6. Output channel ON/OFF key
Turns on or off the channel selected with the output channel selection key (7).

7. Output channel selection key
Selects the output channel for which the volume is adjusted or parameter is set. The output channel indicators on the VFD light in sequence each time the key is pressed.

8. Output volume control
Adjusts the gain of the output channel selected with the output channel selection key (7).

9. Memory key
Used to save the current settings into a Scene memory or recall a saved Scene setting.

10. Enter key
Press this key when such indications as "OK?" are displayed.

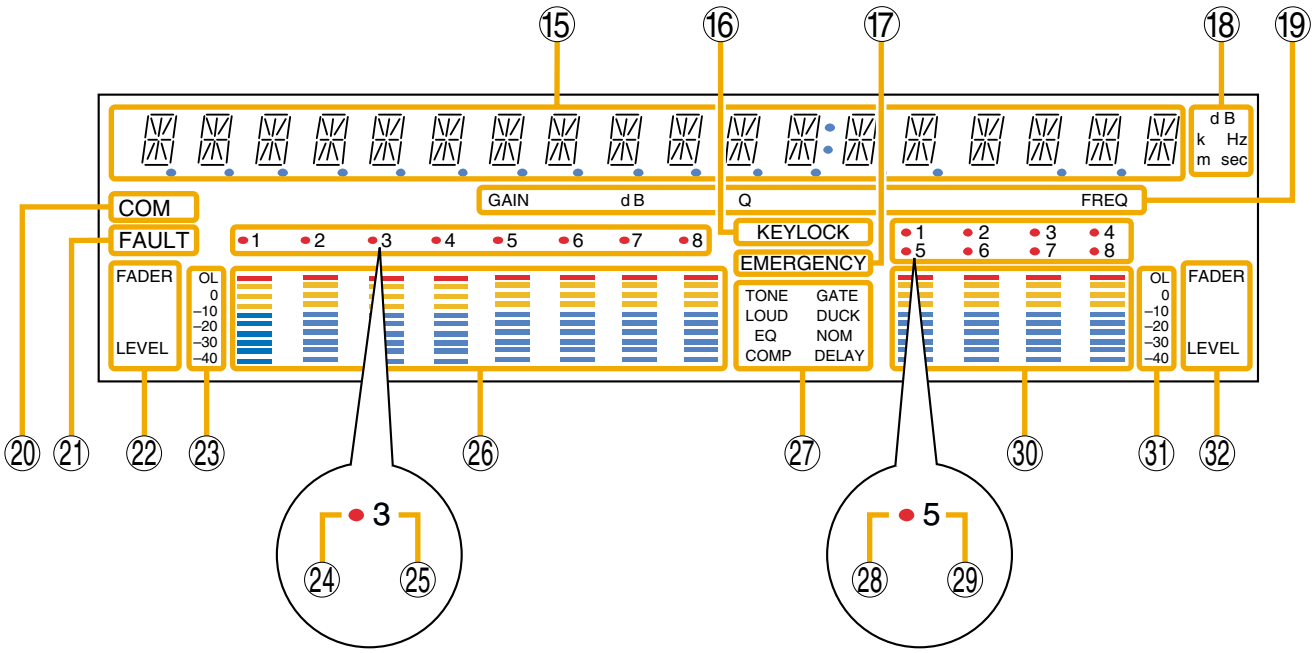
11. Parameter setting knob
Rotate this knob to select the setting item or setting contents.

12. Utility menu key
Used to perform Utility setting.

13. Escape/Back key
Used to revert back to a previous screen when advanced with the Enter key during setting operation, or return to the screen on the upper hierarchy level.

14. Screen shift keys [▲▼◀▶]
Move the setting screen or setting item.

[VFD on-screen indications]



15. 14-Segment,18-digit alphanumeric display
Displays the corresponding setting screen or data when each function key is pressed.
Parameters being edited flash.

16. Keylock indicator
Lights when the key lock function is enabled, and flashes while the key lock function is being edited.

17. Emergency indicator
Lights when the control input set for "Emergency mute" becomes active.

18. Unit indicator
Displays the unit of each parameter when it is set.

19. GAIN, dB, Q, FREQ indicators
Lights when the equalizer is adjusted.

20. COM indicator
Remains lit during communications via the RS-232C interface.

21. Fault indicator
Lights when the unit's failure or other abnormal conditions are detected.
(Refer to p. 118 "ERROR INDICATIONS.")

22. Input meter status indicator
Indicates which the input level (LEVEL) or input fader position (FADER) is being displayed on the input meter (26).

Note
Input level is displayed only when the D-001T module is used.

23. Input level indication
Scale of levels (in dB) for the input meter.

24. Input channel selection indicator (red dot)
Lights when the corresponding input channel is selected, and flashes while parameters are being edited.

25. Input channel ON/OFF indicator (channel number)
The indicators for all channels normally light regardless of whether or not the channels can be selected by the input channel selection keys (2) or can be used (p. 120 "Remarks"), while they flash when turned off by the input channel ON/OFF key (5).
The indicators of unused channels can be set to be off in the Utility setting item.

26. Input meter
Indicates the signal level or input fader position of each input channel.
Which the meter is indicating is displayed on the input meter status indicator (22).

Notes
- The input meter is kept on even for the channel that is turned off or muted.
- Input level is displayed only when the D-001T module is used.

27. Effect indicator
Lights when effect is on, and flashes while the parameters are being edited.

28. Output channel selection indicator (red dot)
Lights when the corresponding output channel is selected, and flashes while parameters are being edited.

29. Output channel ON/OFF indicator (channel number)
Lights when the corresponding output is on (i.e. in operation mode), and flashes when off.
The number of channels of which indicators light depends on the modules used.

30. Output meter
Indicates the signal level or output fader position of each output channel. Which the meter is indicating is displayed on the output meter status indicator (32).

Notes

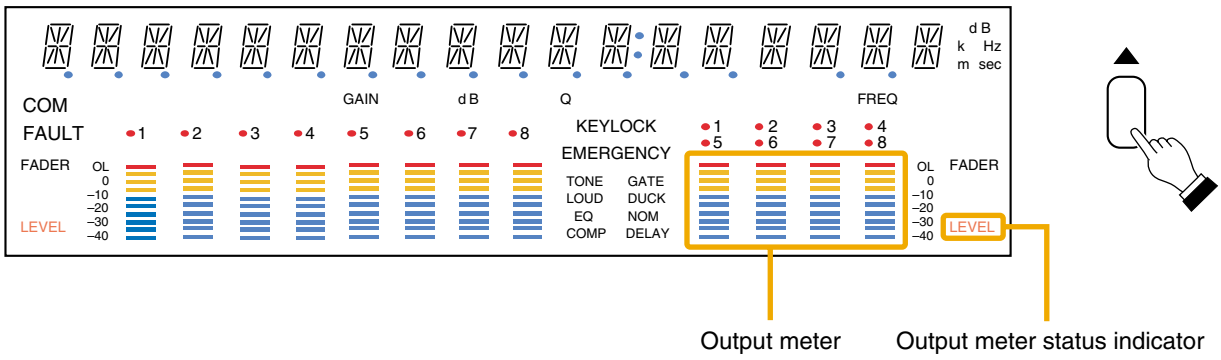
- When the output channel 1 or 2 of the A-9060DH/9120DH/9120DL, or the output channel 1 of the A-9060S/9120S/9240SH is turned off or muted, the corresponding output channel's meter becomes off.
- Even when the output channel 2 of the A-9060S/9120S/9240SH, the M-9000's output channel 1 or 2, or the T-001T's output channel is turned off or muted, the output meter for these channels remains on.

31. Output level indication
Scale of levels (in dB) for the output meter.

32. Output meter status indicator
Indicates which the output level (LEVEL) or output fader position (FADER) is being displayed on the output meter (30).

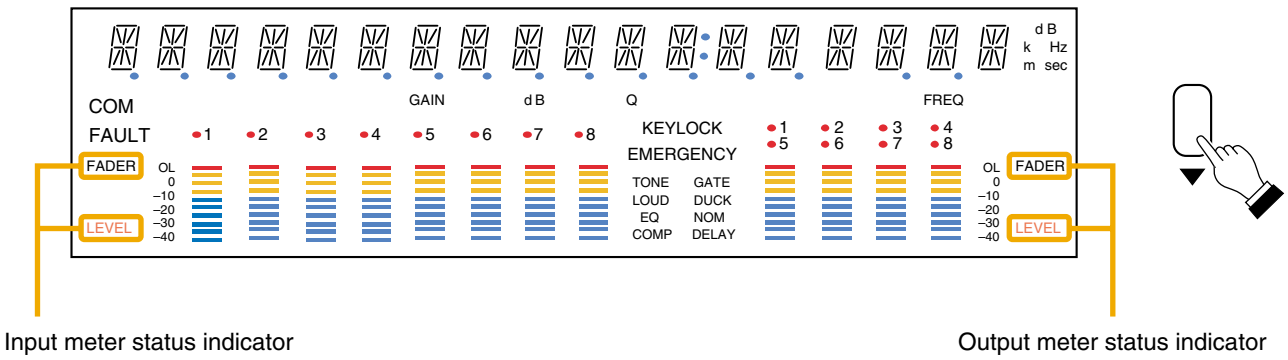
[Changing the indicated channels on the LEVEL output meter]

The output meter indicates the signal levels of only a set of 4 channels: CH 1 – 4 (factory-preset) or CH 5 – 8.
When the input or output gain setting screen is displayed, pressing the Up shift key alternately switches the level indication between CH 1 – 4 and CH 5 – 8.
The LEVEL indicator of the output meter status indicator flashes while the CH 5 – 8 are indicated, and stays lit while the CH 1 – 4 are indicated.
In the same manner, the output meter also changes in the Fader indication.



[Changing the input and output meter display status]

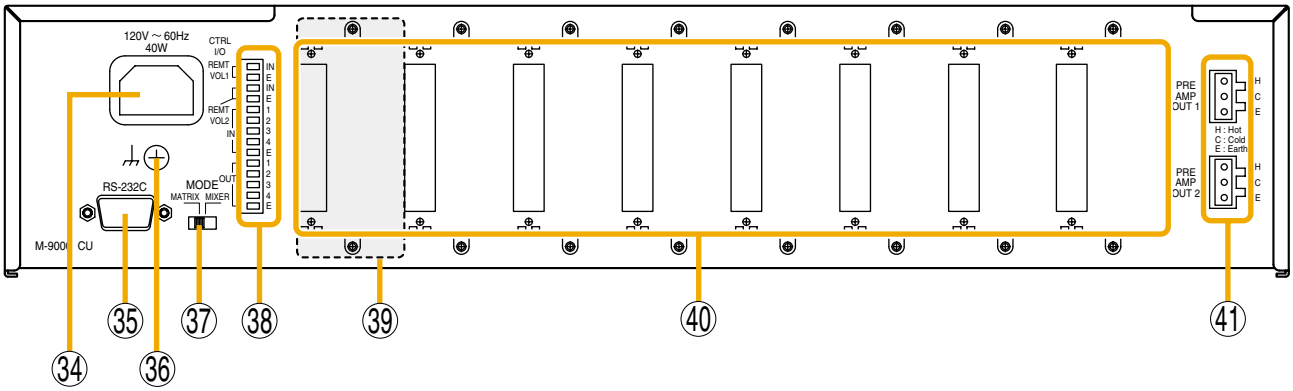
When the input or output gain setting screen is displayed, pressing the Down shift key alternately switches the input and output meter display status between the signal level and the fader position.
The LEVEL indicators on both input and output meters light when the signal levels are indicated, while the FADER indicators light when the fader positions are indicated.



Note: The figure above is the VFD screen display when the input and output levels are indicated.

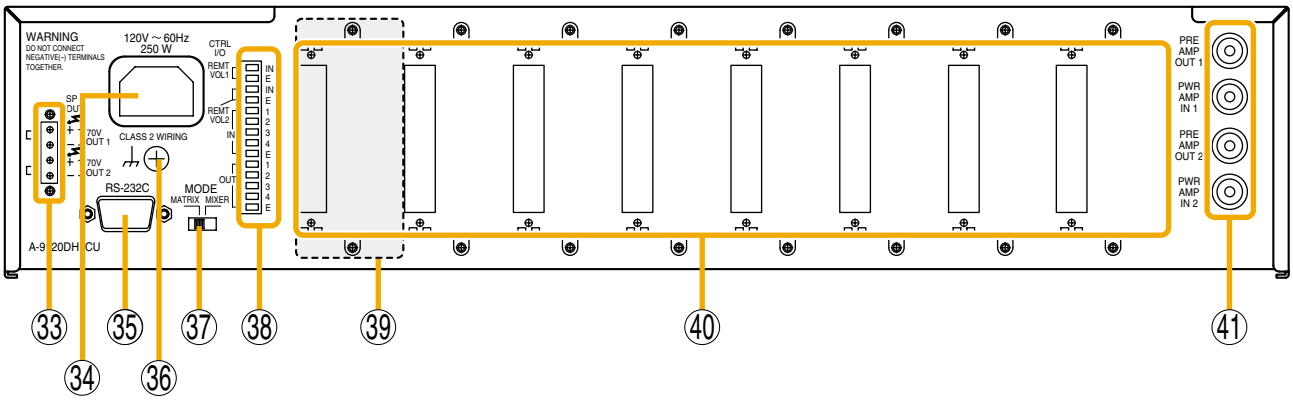
[Rear]

• M-9000



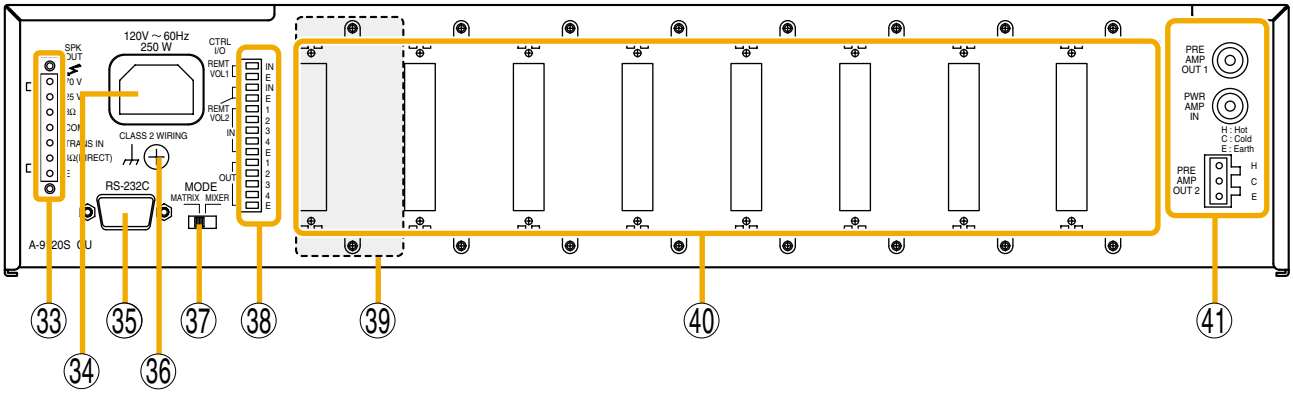
• A-9060DH, A-9120DH, A-9120DL

This figure represents the A-9120DH.

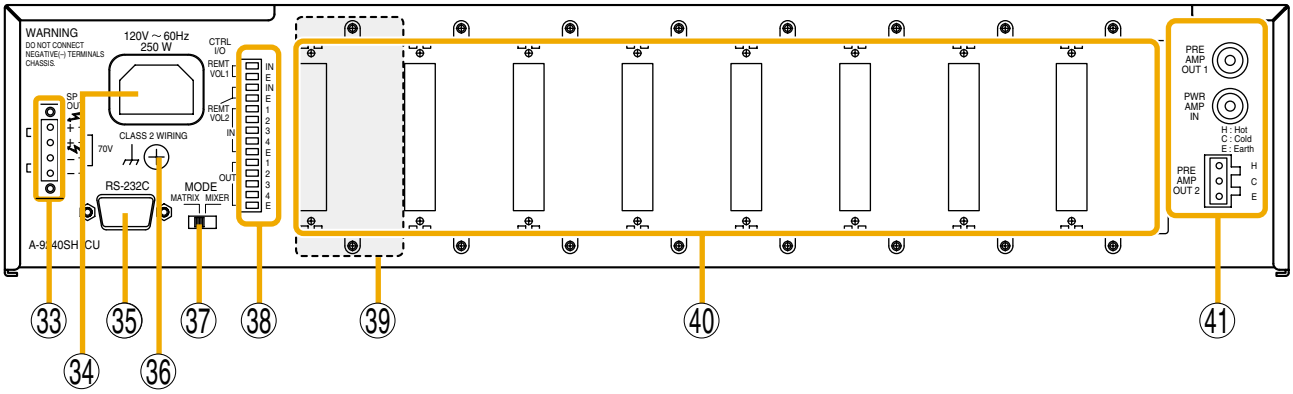


• A-9060S, A-9120S

This figure represents the A-9120S.



• A-9240SH



33. Speaker output terminal
Connects speakers of which total impedance matches the amplifier's output impedance.
(Refer to p.100 "Speaker Output Terminal Connections.")

34. AC inlet
Connects the supplied power cord.

35. RS-232C serial communication port
Connector for communications with a personal computer or control equipment.

36. Functional earth terminal
Hum noise may be generated when external equipment is connected to the unit. Connecting this terminal to the functional earth terminal of the external equipment may reduce the hum noise.

Note: This terminal is not for protective earth.

37. Mode switch
Selects the unit's operation mode (either matrix or mixer).
The switch is factory-preset to the matrix mode.

38. Control-I/O connection terminal
Connect a 10 kΩ (linear taper) variable resistor or input the DC voltage of 0 to +10 V to the remote volume control terminals (REMT VOL 1 and 2) when remotely adjusting the volume.
To perform other remote control operation, connect the ZM-9001 or ZM-9002 Zone Manager.
Input and output terminals (IN and OUT) are used to change the unit's internal status or output internal status data to external equipment after having received various control signals.

39. Blank panel (accessory)
Attach the blank panels to open slots.

40. Module slots
900 Series or 9000 Series modules can be inserted into these slots.
(Refer to p. 94 "MODULE INSTALLATION.")

41. Preamplifier output and Power amplifier input terminals

[M-9000]
There are 2 preamplifier output terminals.
For unbalanced connection, connect the unit's Hot and Earth terminals to the connected equipment's Signal and GND terminals, respectively. (Keep the unit's Cold terminal free.)
0 dB, 600 Ω, balanced type

[A-9060DH/9120DH/9120DL]
There are 2 preamplifier output terminals and 2 power amplifier input terminals.
Connecting a plug to the power amplifier input terminal internally disconnects the preamplifier section from the power amplifier section.
Both terminals: 0 dB, 300 Ω, unbalanced type

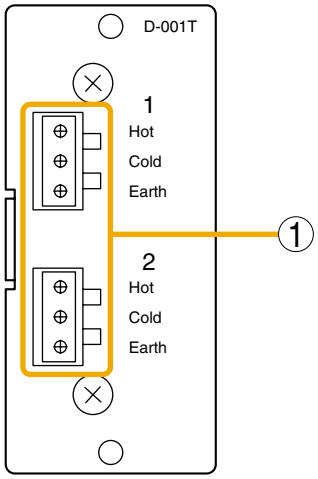
[A-9060S/9120S/9240SH]
There are 2 preamplifier output terminals and 1 power amplifier input terminal.
Connecting a plug to the power amplifier input terminal internally disconnects the preamplifier section 1 from the power amplifier section.
To make unbalanced connection to the preamplifier output 2, connect the output's Hot and Earth terminals to the external equipment's Signal and GND (or Earth) terminals, respectively.
(Leave the output's Cold terminal open.)
Preamplifier output 1: 0 dB, 300 Ω, unbalanced
Preamplifier output 2: 0 dB, 600 Ω, balanced

7.2. Optional Modules

7.2.1. D-001T (2-Channel Input Module)

The D-001T module is designed for use with the 9000 Series amplifiers.
Up to 4 modules (8 channels in total) can be inserted into the amplifier.
The module can handle signals ranging from microphone level (–60 dB) to line level (–10 dB) in 9 input sensitivity levels.
Phantom power (24 V) can be supplied for microphone level (–60 dB to –30 dB) signals.
The D-001T module has an internal digital signal processor that can process input signals.

The D-001T module is required to use a VOX (Voice Operated Exchange) function and input channel level meter.

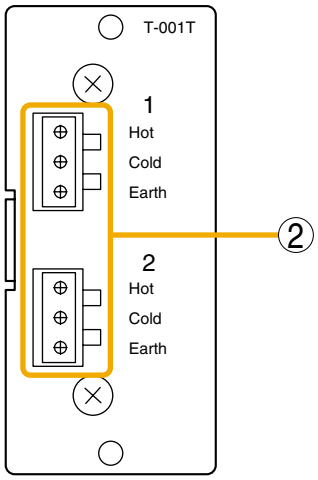


1. Monaural input terminals [1, 2]

Electronically-balanced 3P removable terminal blocks.
Input level: –60 dB to –10 dB selectable.
Input impedance is 10 kΩ when the phantom power is OFF, and 3 kΩ when ON.

7.2.2. T-001T (Audio Output Expansion Module)

The T-001T module is designed for use with the 9000 Series amplifiers and can expand 2 output channels per module.
Since the main unit has 2 fixed outputs, the audio output can be expanded to 8 channels by using a maximum of 3 modules (6 channels).



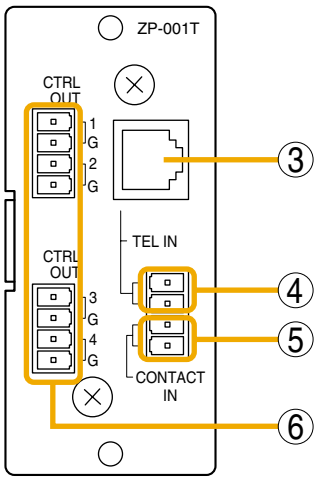
2. Monaural output terminals [1, 2]

Electronically-balanced 3P removable terminal blocks.
Output level: 0 dB
Output impedance: 600 Ω
For unbalanced connection, connect the unit's Hot and Earth terminals to the connected equipment's Signal and GND terminals, respectively. (Keep the unit's Cold terminal free.)

7.2.3. ZP-001T (Zone Paging Module)

The ZP-001T module is designed for use with the 9000 Series amplifiers and functions as an interface to connect the 9000 Series amplifiers to an analog PABX, allowing zone paging to be initiated from the PABX. Only one ZP-001T module can be used per 9000 Series amplifier.

There are two operation modes: Ring signal and Paging port modes. Select one of the two modes when using this module.
The operation method differs depending on the set operation mode. (Refer to p. 30 "Zone Paging.")



3. Telephone input terminal [TEL IN] (Modular jack)
Interface connector for an analog PABX.
Connect a PABX to this terminal when using the module in the ring signal mode.

4. Telephone input terminal [TEL IN]
4-pin removable terminal block, 2 pins are used for this input.
This terminal is internally connected in parallel with the telephone input terminal (modular jack) (3).
Connect a PABX to this terminal when the paging port is used (paging port mode).

5. Control input terminal [CONTACT IN]
4-pin removable terminal block, 2 pins are used for this input.
Connect the control output from a PABX to this terminal.

6. Control output terminals [CTRL OUT 1 G, 2 G, 3 G, 4 G]
4-pin removable terminal blocks, control output terminals.
Note: These terminals are not used in the Mixer mode.

[Requirements of the PABX to be connected to the ZP-001T]

- The PABX shall be complaint with TIA/EIA-464-B standard.
- Specifications or conditions required in each of the following modes shall be satisfied:

Note: The ZP-001T may malfunction if the connected PABX does not meet the above requirements.

(A) When using the module in the Paging port mode
- Connection: Line level paging port
- Signaling method: DTMF (The module cannot be operated with dial pulse.)
- Shall provide no-voltage make contact during paging calls.
- Insensitive to whether loop voltage exists or not, and whether polarity of the loop voltage is reversed or not when a line connection is established.

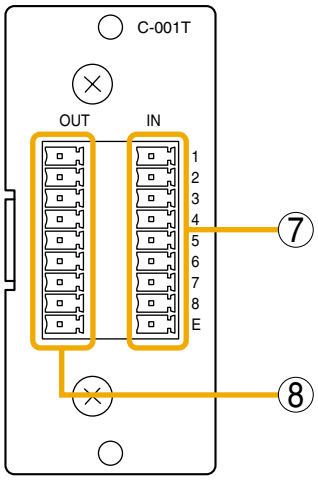
Note
If the PABX does not meet the above requirements, use the D-001T module and set the trigger to "VOX" (Voice Operated Exchange) to initiate paging. In this case, the paging output channel cannot be selected, which differs from the operation by the ZP-001T.

(B) When using the module in the Ring signal mode
- Connection: Analog two-wire extension line, loop start
- Signaling method: DTMF (The module cannot be operated with dial pulse.)
- Reorder tone: 120 IPM (impulses per minute) or less
- Loop voltage: 24 VDC or more* (polarity insensitive)
- Insensitive to whether polarity of the loop voltage is reversed or not at a call from the PABX.*
- Loop voltage supply shall not be cut off from the beginning of a call to the reorder tone out.*
- The state of CPC (Calling Party Controlled) break or "Open Loop Disconnect" shall be reset at the PABX.*

* Note that there is no need to meet these requirements provided that the ZP-001T's control input terminals are kept closed. However, noise may be output if the line is physically disconnected during a paging call because the ZP-001T cannot recognize the line cutoff nor stop output for 30 seconds after paging initiation.

7.2.4. C-001T (Control I/O Expansion Module)

The C-001T module is designed for use with the 9000 Series amplifiers and can provide up to 8 channels each of input and output expansion.
Since the main unit has 4 fixed inputs and outputs each, the control input and output can be expanded to up to 12 channels each when the C-001T module is used.

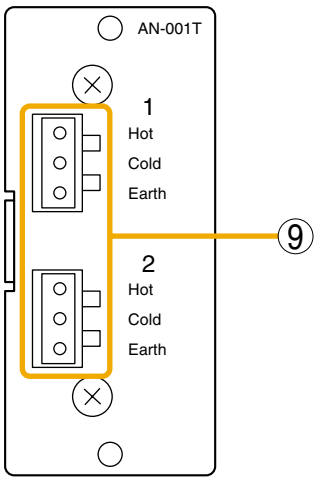


7. Control input terminal [IN 1, 2, 3, 4, 5, 6, 7, 8, E]
9-pin removable terminal block, 8-circuit control input terminal.
Individual input functions are assigned on the front panel setting screen of the main unit.

8. Control output terminal [OUT 1, 2, 3, 4, 5, 6, 7, 8, E]
9-pin removable terminal block, 8-circuit control output terminal.
Individual output functions are assigned on the front panel setting screen of the main unit.

7.2.5. AN-001T (Ambient Noise Sensor Input Module)

The AN-001T module is designed for use with the 9000 Series amplifiers and automatically adjusts the amplifier's output volume in response to the change in ambient noise level.
Maximum 2 AN-001T modules (4 channels in total) can be used per 9000 Series amplifier.
It can handle signals from microphone level (–60 dB) to line level (–10 dB) by controlling the gain in 9 steps.
Phantom power (+24 V) can be supplied to a condenser microphone.
The AN-001T's inputs are for detecting ambient noise level and cannot be used as normal audio inputs. Ambient noise fed to the inputs can be monitored when the monitor function is set to ON in the Input setting flow.



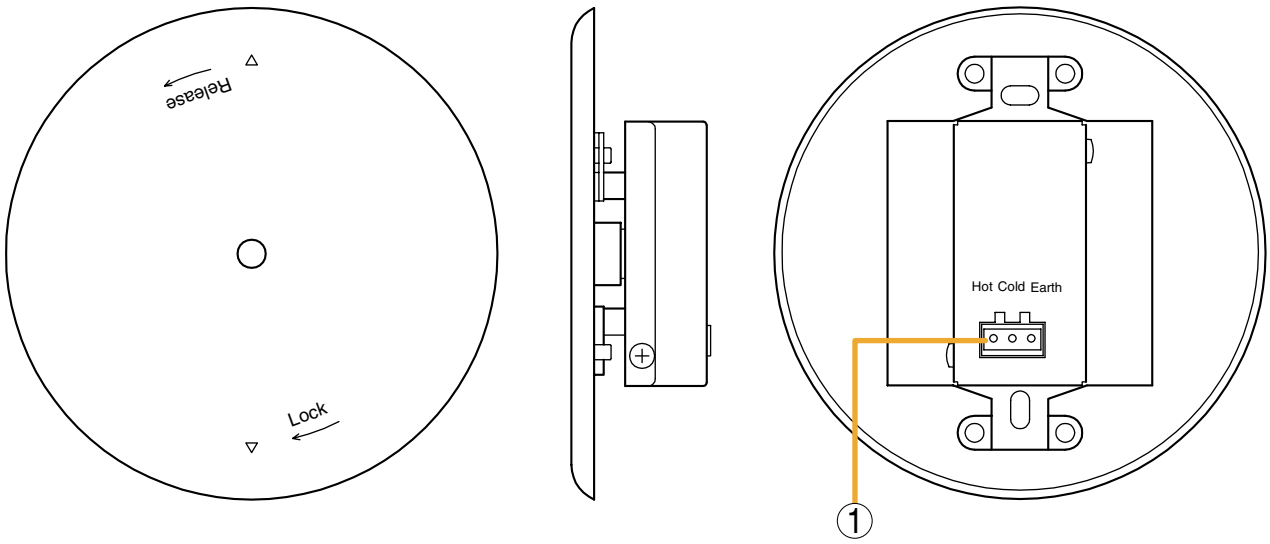
9. Monaural input terminals [1, 2]
Electronically-balanced 3P removable terminal blocks.
Input level: –60 dB to –10 dB selectable.
Input impedance is 10 kΩ when the phantom power is OFF, and 3 kΩ when ON.

7.3. Optional Accessories

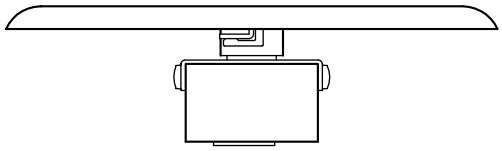
7.3.1. AN-9001 (Ceiling Mount Microphone)

The AN-9001 is designed to be mounted in a wall or ceiling with the use of a 1-gang electrical box.
It is used in conjunction with the AN-001T Ambient Noise Sensor Input module in the 9000 Series system.

[Front] **[Side]** **[Rear]**



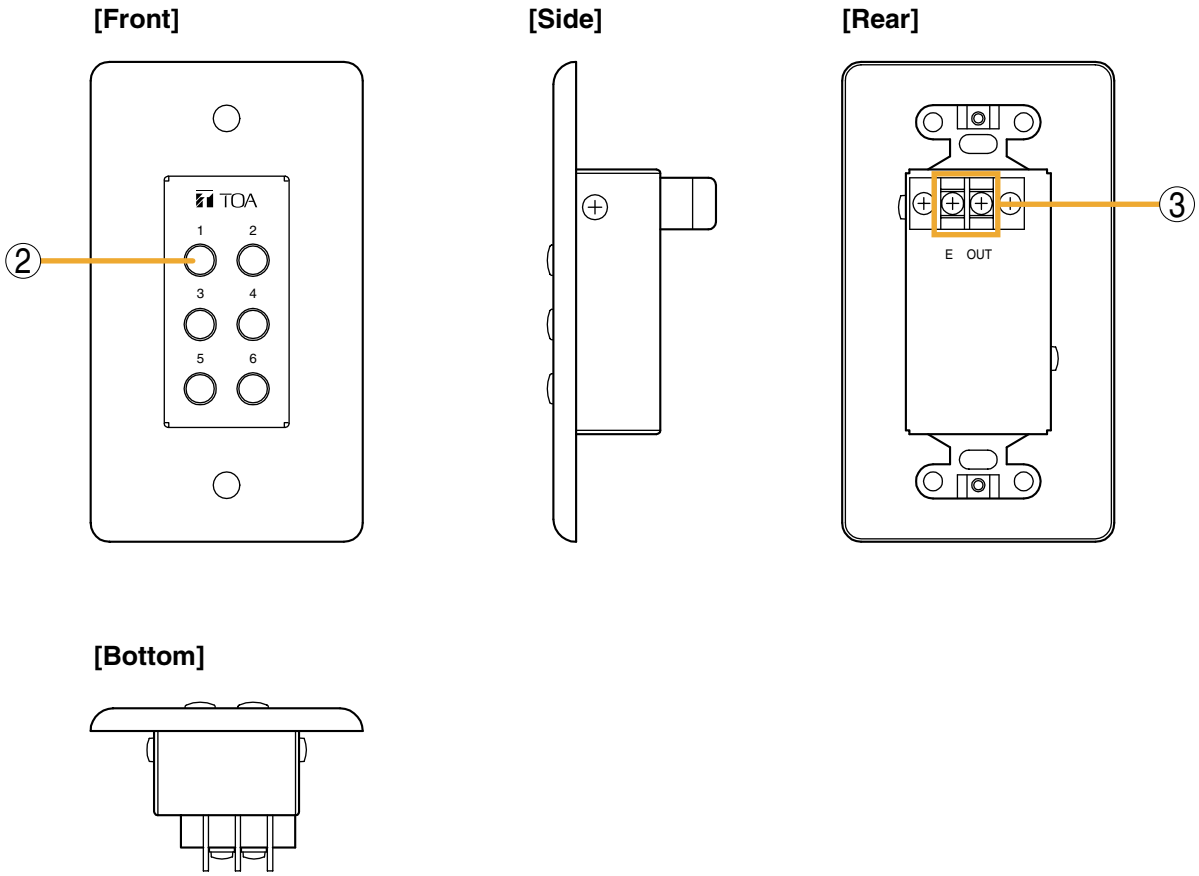
[Bottom]



1. Microphone output terminal [Hot, Cold, Earth]
Electronically-balanced 3P removable terminal block.
Sensitivity: –5 dB (1 kHz, 0 dB=1 V/Pa)
Output impedance: 200 Ω

7.3.2. ZM-9001 (Zone Manager)

The ZM-9001 adds 6 control inputs and can be mounted in a 1-gang electrical box.

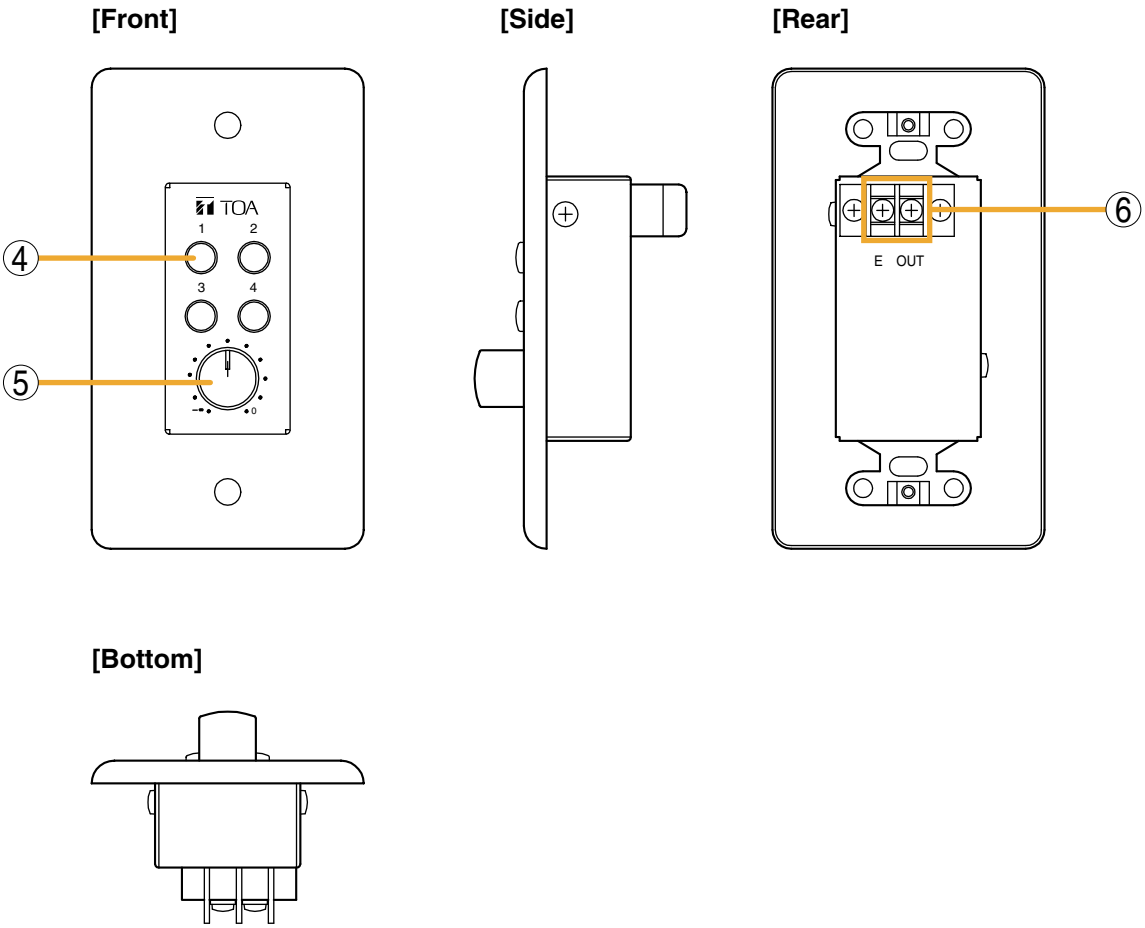


2. Control buttons [1 – 6]
Activate the function assigned to them when pressed.

3. Control output terminal [E, OUT]
Connect this terminal to the 9000 Series amplifier's REMT VOL terminal.
Use a twisted pair cable with 50 Ω or less line resistance (per line) for this connection.
Avoid installation of this cable and power cables in the same conduit. Separate piping.

7.3.3. ZM-9002 (Zone Manager)

The ZM-9002 adds 4 control inputs and 1 volume control, and can be mounted in a 1-gang electrical box.



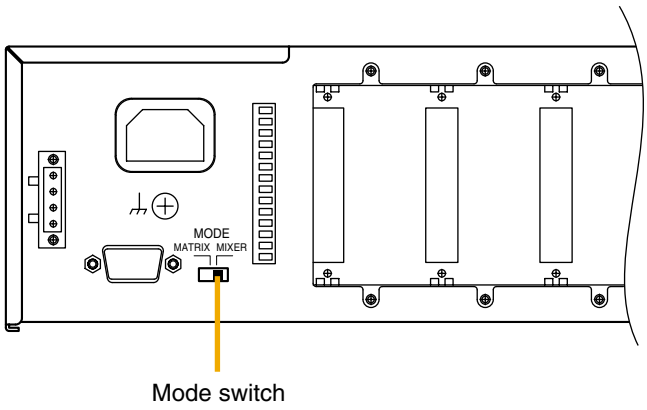
4. Control buttons [1 – 4]
Activate the function assigned to them when pressed.

5. Volume control
Adjusts the volume on the assigned input or output channel.

6. Control output terminal [E, OUT]
Connect this terminal to the 9000 Series amplifier's REMT VOL terminal.
Use a twisted pair cable with 50 Ω or less line resistance (per line) for this connection.
Avoid installation of this cable and power cables in the same conduit. Separate piping.

8. DESCRIPTION OF MIXER MODE

Two operation modes are made available to the unit: Matrix mode and Mixer mode.
Select the mixer mode by the Mode switch on the rear panel before using the unit.
(The mode switch is factory-preset to the matrix mode.)



Mode switch

Important

Be sure to disconnect the power supply plug from the AC outlet when changing the mode.
Since the changes in mode will erase all setting contents, download the set files that need to be stored using the supplied PC software. (Refer to p. 113 "Storing or Recalling Parameters Set at the Unit.")

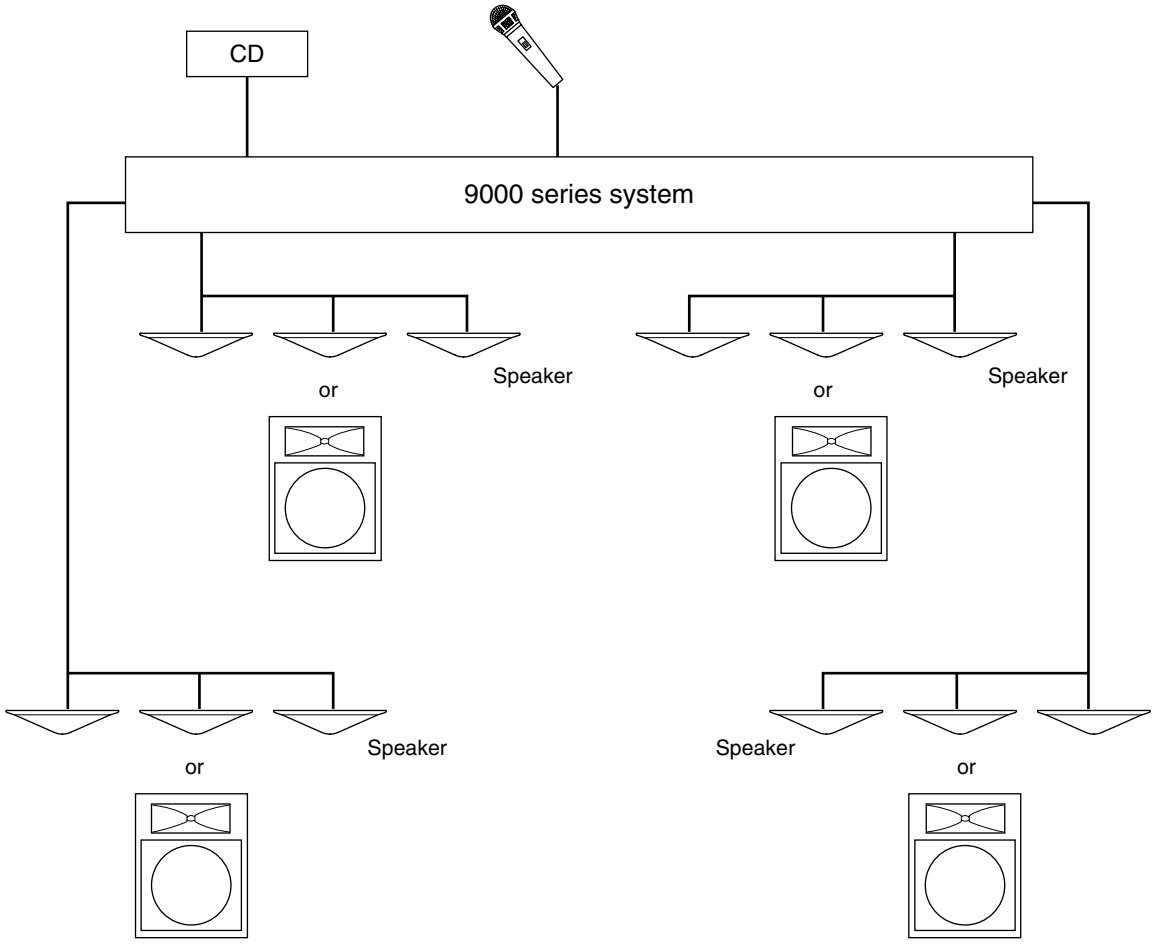
This manual describes the instructions on the unit set for the Mixer mode. When you use the unit in the Matrix mode, please read the separate instruction manual for the matrix mode.

8.1. General Description

This mode is suitable for speech and sound reinforcement applications in the hotel meeting rooms, churches, and conference rooms.
Input signals are mixed in the mixer mode, and the operator can make fine adjustments to signal mixing in real time while actually monitoring sound output.
Up to 32 sound adjustments made depending on the usage environment or scene can be stored as Scene memory and recalled. Further, the input signal sound volume can be automatically adjusted using an auto-mixing function (ducker function* and NOM attenuation function*).

* Refer to p. 26 "Glossary."

[Application example for a ball room, meeting room, etc.]



8.2. Glossary

- **ANC (Ambient Noise Control) function (AN-001T only)**

  The ANC function automatically adjusts the amplifier's output volume in response to the change in ambient noise level.
  The output volume changes as the ambient noise level goes above or below the set reference level.

- **Ducker function**

  The Ducker function automatically attenuates input signals with lower priority when two or more audio signals are simultaneously received. This function cannot be used if any of such received inputs is not set for the Ducker function.

- **VOX (Voice Operated Exchange) function (D-001T only)**

  This function initiates the set paging when an audio signal is input. No paging is initiated when no input signal exists. If the audio signal drops below a preset level after the VOX function begins operation (i.e. after an audio signal is fed into the module), the set paging is terminated after approximately 5 seconds.

- **NOM (Number of Open Microphones) attenuation function**

  The NOM attenuation function automatically adjusts an output gain depending on the number of open microphones.
  The output gain is attenuated by the value set on the Utility setting screen (p. 56-C3) each time the number of open microphones doubles. This function helps to prevent feedback.

- **Gate function**

  The gate function allows the input signal to be passed, attenuated or cut depending on its signal level.
  The gate allows the signal to pass when open with the signal level over the set value, and to be attenuated or cut when closed with the signal level below the set value.
  The gate's open/close operations control the Ducker function and the NOM attenuation function.

- **Scene**

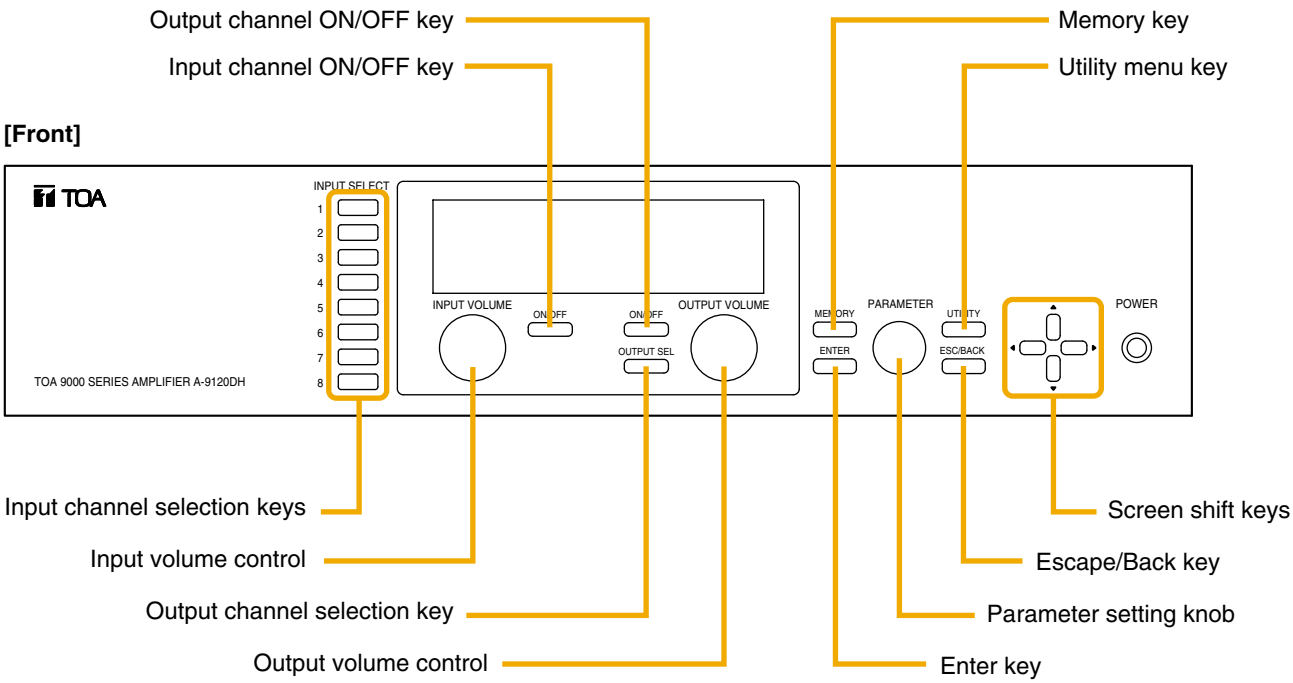
  A "Scene" is the unit that defines broadcast pattern and up to 32 types of Scenes can be saved as Scene memory.
  Input and output parameters that have been set can be saved in the Scene memory.
  (Refer to p. 83 "Memory setting items.")

9. OPERATION

To operate the unit, you can use the saved Scene settings, or adjust the sound volume and tone or turn the input/output channels on or off through the front key operation or by way of remote control with the default settings as they are.

9.1. Basic Operation

9.1.1. Keys and knobs



This figure represents the A-9120DH.

9.1.2. Power ON/OFF

Power is turned on when the power switch is pressed.
To turn off the power, hold down the power switch for 0.5 second or more.

Note
The power switch is a soft-switch, so the internal microcomputer is still operating even when the power switch is set to OFF.

9.1.3. Changing the input parameters

Step 1. Press the Input channel selection key to choose the input channel for which you want to change the volume from those with the illuminated Input channel ON/OFF indicator (channel number).
The selected channel's selection indicator (red dot) lights, and the channel name and volume level are displayed on the VFD screen.

Step 2. Adjust the input parameters.
Adjust the volume, bass, treble, or other input parameters. (Refer to p. 40 "Input setting items.")

9.1.4. Changing the output parameters

Step 1. Press the Output channel selection key to turn on the Output channel selection indicator (red dot) for the output channel for which you want to change volume.
Channels to be selected will change each time the Output channel selection key is pressed.
The channel name and volume level are displayed on the VFD screen.

Step 2. Adjust the output parameters.
Adjust the volume, bass, treble, or other output parameters.
(Refer to p. 48 "Audio output setting items.")

9.1.5. Input channel ON/OFF

Input channels alternate between ON and OFF with each depression of the Input channel ON/OFF key.
The channel is ON when the input channel ON/OFF indicator (channel number) lights.

9.1.6. Output channel ON/OFF

Output channels alternate between ON and OFF with each depression of the Output channel ON/OFF key.
The channel is ON when the Output channel ON/OFF indicator (channel number) lights.

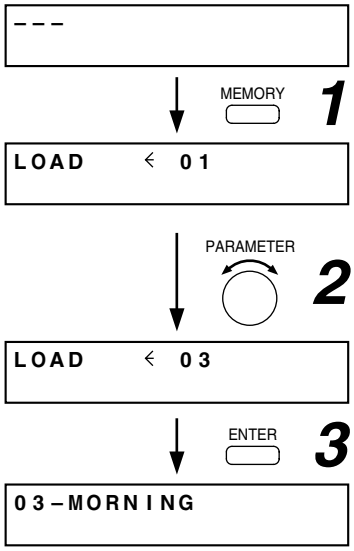
9.2. Recalling Scene Memory

A "Scene" defines the unit of broadcast pattern in mixer mode.
Up to 32 patterns can be stored as Scene memory in the Scene memory bank, which can then be recalled.

Step 1. Press the Memory key to display the Scene memory recall screen.

Step 2. Select with the Parameter setting knob the Scene memory bank number to be recalled.

Step 3. Press the Enter key.
After recall completion, the Scene memory bank number and memory name are displayed.



9.3. Zone Paging

This section describes the method of initiating zone paging from a PABX (extension telephone) using the ZP-001T Zone Paging Module. The following 2 operation modes are available for the ZP-001T: Paging port mode and Ring signal mode.

In both operation modes, when any of the following situations arises, the ZP-001T will not receive calls from the PABX or paging calls will be muted. Even when paging calls are muted, since the line is kept connected, they resume after the situation is restored.

- The input channel for the ZP-001T is turned off.
  The ZP-001T will not receive calls from the PABX.
  When this is done during paging calls by way of the ZP-001T, paging calls are muted.
- The input channel for the ZP-001T is muted by way of the control input.
  The ZP-001T can receive calls from the PABX, but paging calls are muted.
  When this is done during paging calls by way of the ZP-001T, paging calls are muted.
- Emergency-mute (EMG-MUTE) is activated by way of the control input.
  The ZP-001T can receive calls from the PABX, but paging calls are muted.
  When this is done during paging calls by way of the ZP-001T, paging calls are muted.

9.3.1. Paging port mode

Step 1. Activate the paging port from the extension telephone.
Since this method differs depending on the type of exchange, please read the instruction manual for the extension telephone.
When the paging port is activated and the control input terminal is closed, the ZP-001T module connects the line.

Step 2. Select the output channel.
Press [0] first, followed by the output channel number ([1] – [8] or [9] when selecting all numbers simultaneously). Pressing the [#] key completes the output channel selection.

Example: To select Outputs 2 and 3, press [0] [2] [3] [#].
To make an all-zone call, press [0] [9] [#].

Step 3. Begin paging.
When the pre-paging tone is set to ON (p. 43-A13), begin paging after the tone sounds.
When the selected output channel is being used by other broadcast with higher priority level, a busy tone is heard from the handset, indicating that paging cannot be performed.

Step 4. Deactivate the paging port to terminate paging.
Since this method differs depending on the type of exchange, please read the instruction manual for the extension telephone.

9.3.2. Ring signal mode

Step 1. Make a call from the extension telephone to the ZP-001T module.
After a calling tone sounds twice, the ZP-001T receives the call and a callback tone is heard from the handset.

Step 2. Select the output channel.
Press [0] first, followed by the output channel number ([1] – [8] or [9] when selecting all numbers simultaneously). Pressing the [#] key completes the output channel selection.

Example: To select Outputs 2 and 3, press [0] [2] [3] [#].
To make an all-zone call, press [0] [9] [#].

Step 3. Begin paging.
When the pre-paging tone is set to ON (p. 43-A13), begin paging after the tone sounds.
Paging can be performed within 30 seconds after the call gets through. After 30 seconds have elapsed, the line is automatically disconnected.
When the selected output channel is being used by other broadcast with higher priority level, a busy tone is heard from the handset, indicating that paging cannot be performed.

Step 4. To terminate paging, press [0] [0] [#], and then replace the handset.

If dialing [0] [0] [#]: Pressing a first [0] terminates paging (a DTMF tone for the first [0] is output), and the ZP-001T disconnects the line after the [#] has been pressed.

If replacing the handset without dial operation: After a signal tone is transmitted about 3 times, the paging is terminated and the line disconnected.

9.4. Releasing Key Lock

The key lock function prevents the front-mounted keys or knobs from being tampered. (Refer to p. 76 "Key Lock Function Setting.")
You can temporarily operate the locked keys by entering a password to unlock them. Operation after password entry differs depending on the locked keys.

Step 1. Press the locked key.
The password entry screen is displayed with the flashing indication of the character entry position on the extreme left.

Note
If the front-mounted key operation is locked, the password entry screen appears after you press the input or output selection key and attempt to rotate the input or output volume control.

Step 2. Press the Enter key if no password has been set.
If the password has been set, enter it using the Input channel selection keys.

Entering a character causes the next character entry position to flash for character entry.
When the entered password is correct, the locked key is released. If the registered password is comprised of 1 to 3 characters, as soon as entered 1 to 3 characters agree with them, the locked key is released.

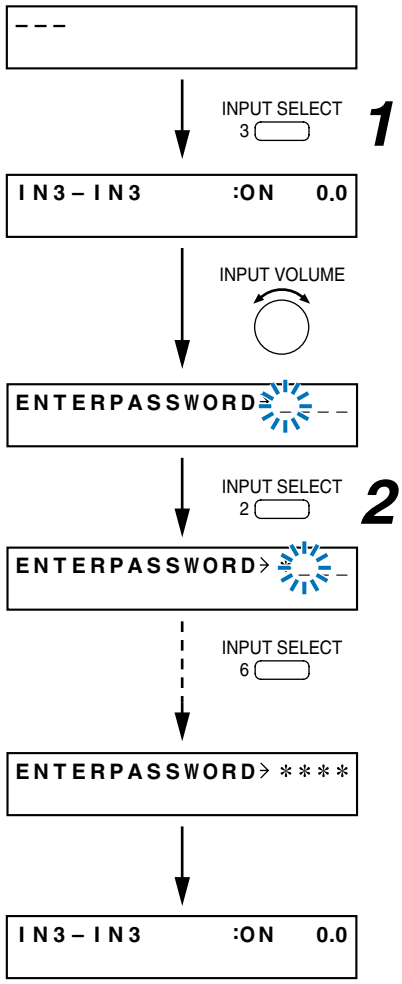
When released keys are those of the type related to input and output operations, they become temporarily operable, but revert to the locked state if they are left unused for 1 minute.

When utility-related keys are released, the key lock menu screen is displayed, clearing the password setting automatically.
Move to the screen for which you want to make a change. When wishing to lock the keys using the password even after the setting has been changed, set the password again. (Refer to p. 80 "Password setting.")
To simultaneously release all locked keys, set the all-key lock function to OFF on the all-key lock ON/OFF setting screen.

When the power switch is locked, the password entry screen is not displayed if the power switch is pressed, and so the power cannot be turned off.

Since the key lock function helps to prevent the front panel keys or knobs from being tampered, their operation can be performed by controls through the control input terminals even if the keys or knobs are locked.

(Example when input keys are locked)



9.5. Operation Example

The operation procedure is described here using an example to change the output parameters after recalling the Scene memory when the output operation key is locked.

Step 1. Press the Memory key to display the Scene memory recall screen.

Step 2. Select with the Parameter setting knob the Scene memory bank number to be recalled.

Step 3. Press the Enter key.

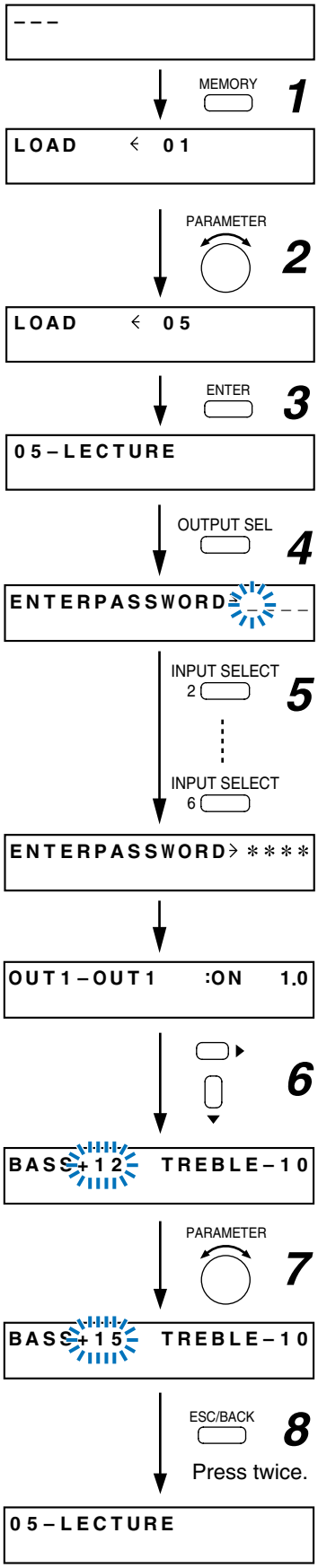
Step 4. Press the output channel selection key.
The password entry screen is displayed with the leftmost character entry position flashing.

Step 5. Enter the password with the input channel selection keys.
The locked key is released when the entered password is correct.

Step 6. Use the Up, Down, Left and Right shift keys to display the desired setting screen.

Step 7. Change the parameter with the Parameter setting knob.

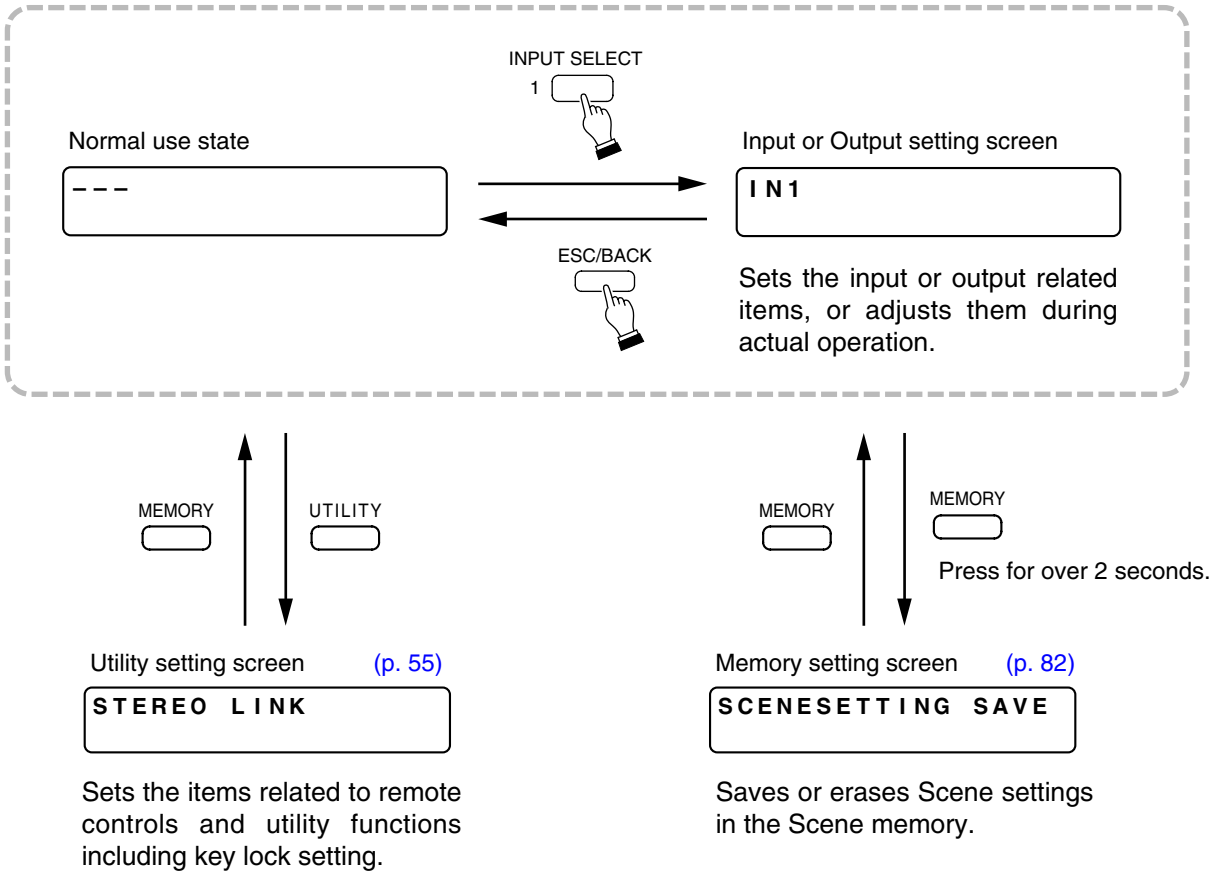
Step 8. Press the Escape/Back key twice.
The display returns to the Scene memory indication screen.



10. SETTING

Ensure that the Mode switch on the unit's rear panel is set to the MIXER position before performing the setting.
The setting items include those which will be convenient when having been set before operation (audio input/output parameters and utility settings), and those which restrict operations of front panel keys and knobs (key lock setting included in the utility setting flow).
Such settings made before operation can be saved by using the Scene memory function.
Entering any setting screen does not interrupt broadcasts.

10.1. Setting Menu Flow

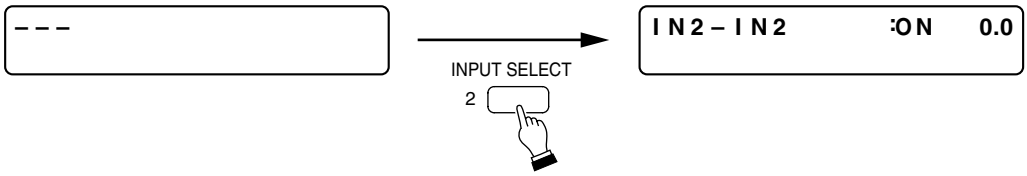

INPUT SELECT
1
Normal use state
– – –
Input or Output setting screen
I N 1
ESC/BACK
Sets the input or output related items, or adjusts them during actual operation.
MEMORY
UTILITY
Utility setting screen
(p. 55)
S T E R E O L I N K
Sets the items related to remote controls and utility functions including key lock setting.
MEMORY
MEMORY
Press for over 2 seconds.
Memory setting screen
(p. 82)
S C E N E S E T T I N G S A V E
Saves or erases Scene settings in the Scene memory.

10.2. Basic Setting Operation

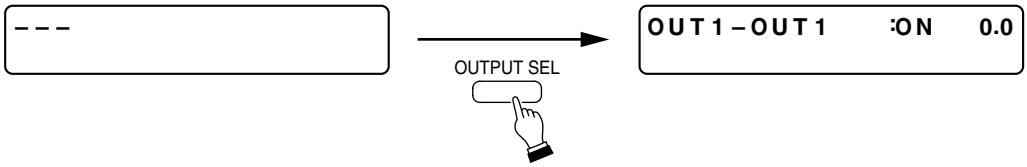
10.2.1. Moving to setting screens

- The normal use state screen appears on the VFD display when the power is turned on in the factory default setting.

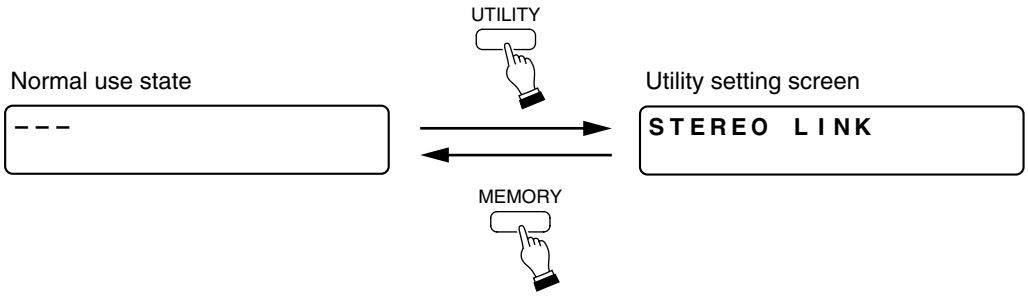
- To select the input channel, use the input channel selection key.



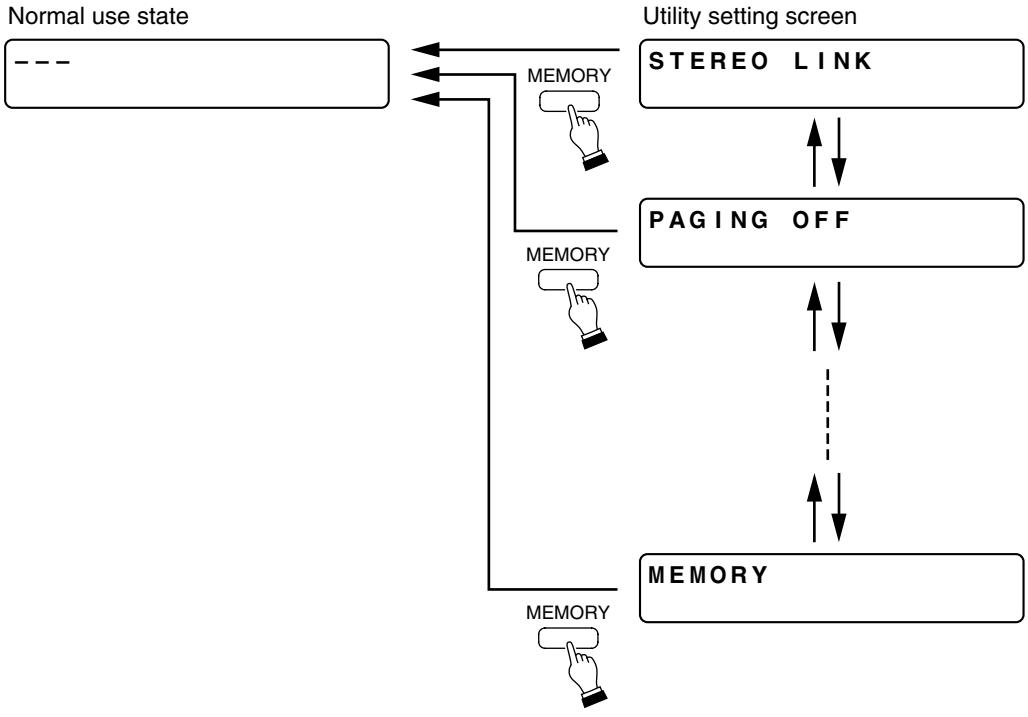
- To select the output channel, use the output channel selection key.



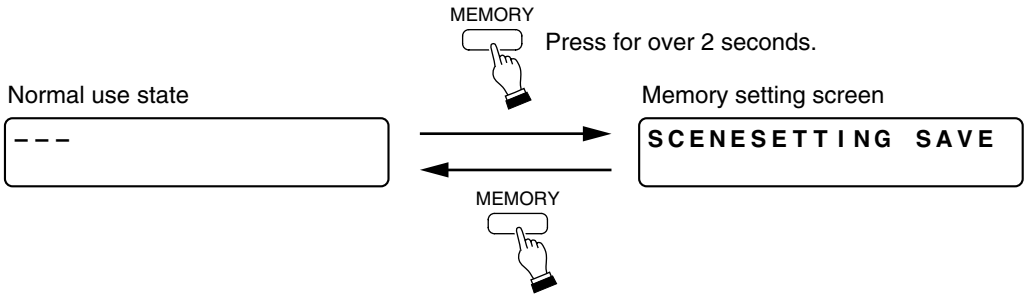
- Pressing the Utility key in the normal use state or at the input or output setting screen changes the display to the Utility setting screen. To revert back to the normal use state, press the Memory key.



Tip
Pressing the Memory key at any Utility setting screen on the uppermost hierarchy level - any of the screens you can move to with the Up or Down shift key starting from the stereo link setting screen as illustrated- reverts the display back to the normal use state screen.



• Pressing the Memory key for over 2 seconds in the normal use state or at the input or output setting screen changes the display to the memory setting screen. To revert back to the normal use state, press the Memory key again.



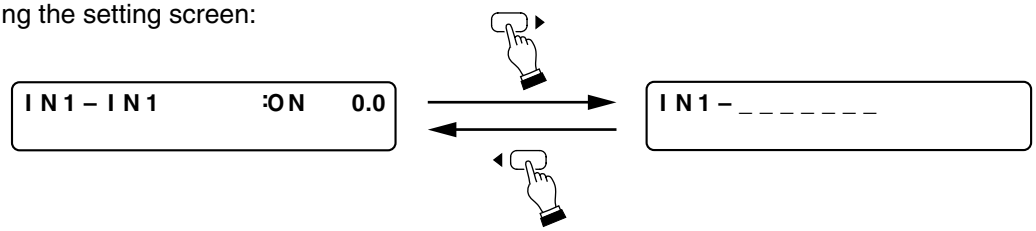
10.2.2. Setting screen operation examples

[Moving the setting screen or setting item]

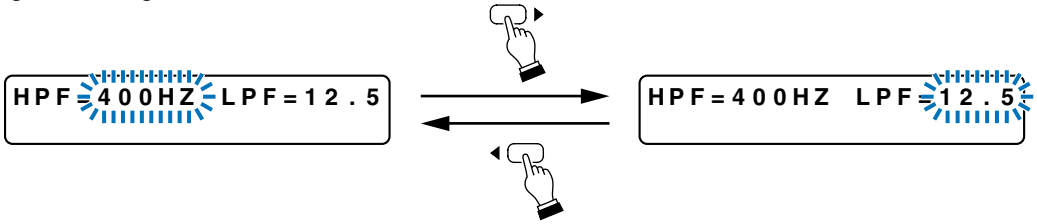
Use the Screen shift key mainly. (The Enter and Escape/Back keys may also be used.)

• Examples of using the Left and Right shift keys

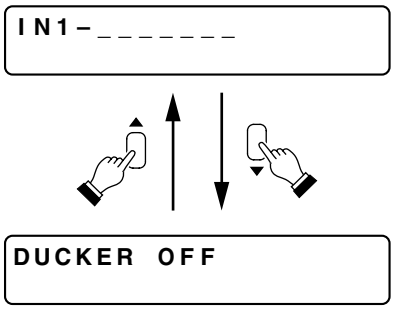
When moving the setting screen:



When moving the setting item on the same screen:

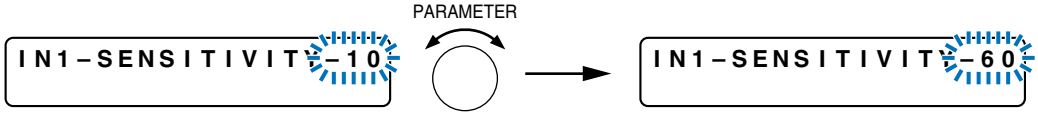


• Example of using the Up and Down shift keys



[Setting content selection]

Use the Parameter setting knob in most cases.
In some cases, however, use the input and output channel selection keys, or the input and output channel ON/OFF keys.

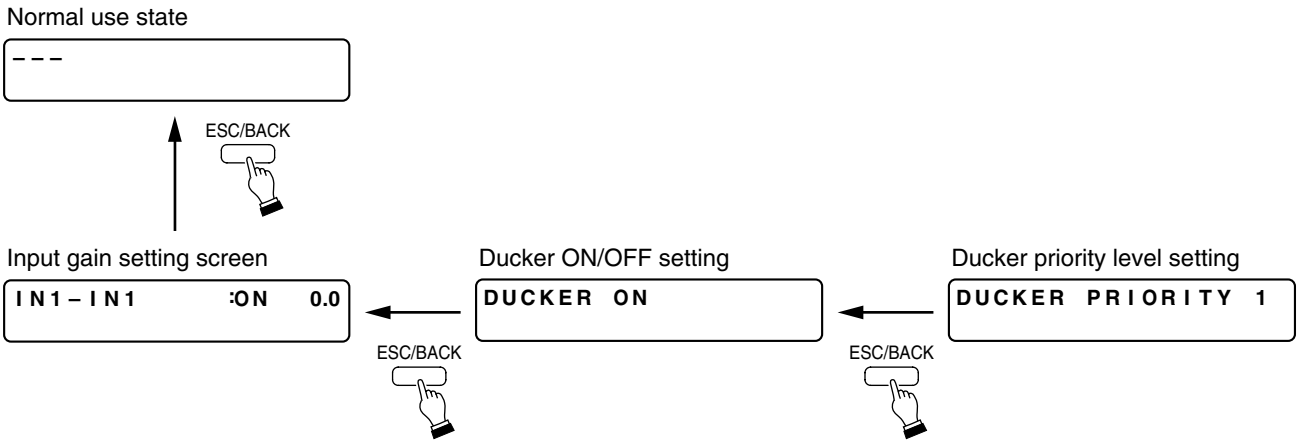


[Returning to the upper hierarchy level]

Pressing the Escape/Back key at any setting screen reverts the display to the screen on the upper hierarchy level in the menu item setting flow.

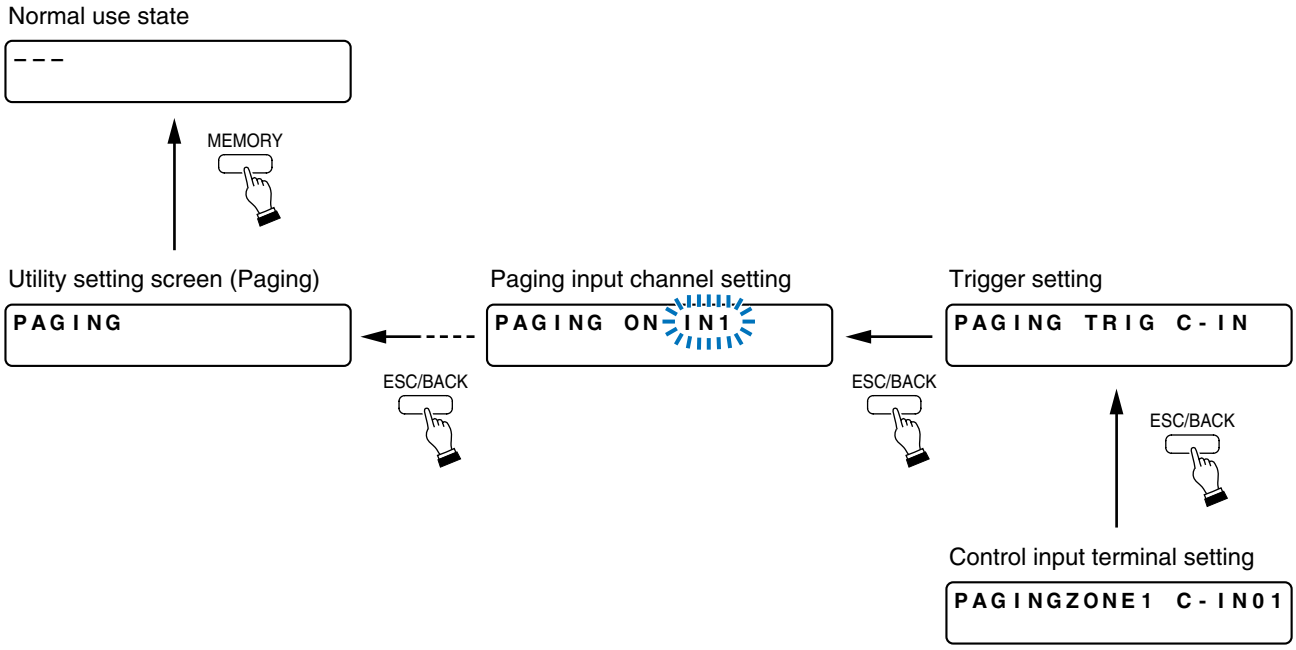
• Example of using the Escape/Back key at the input or output setting screen

Pressing the Escape/Back key several times at any input or output setting screen reverts the display back to the input or output gain setting screen. Pressing the Escape/Back key again reverts the display to the normal use state.



• Example of using the Escape/Back key at the Utility setting screen

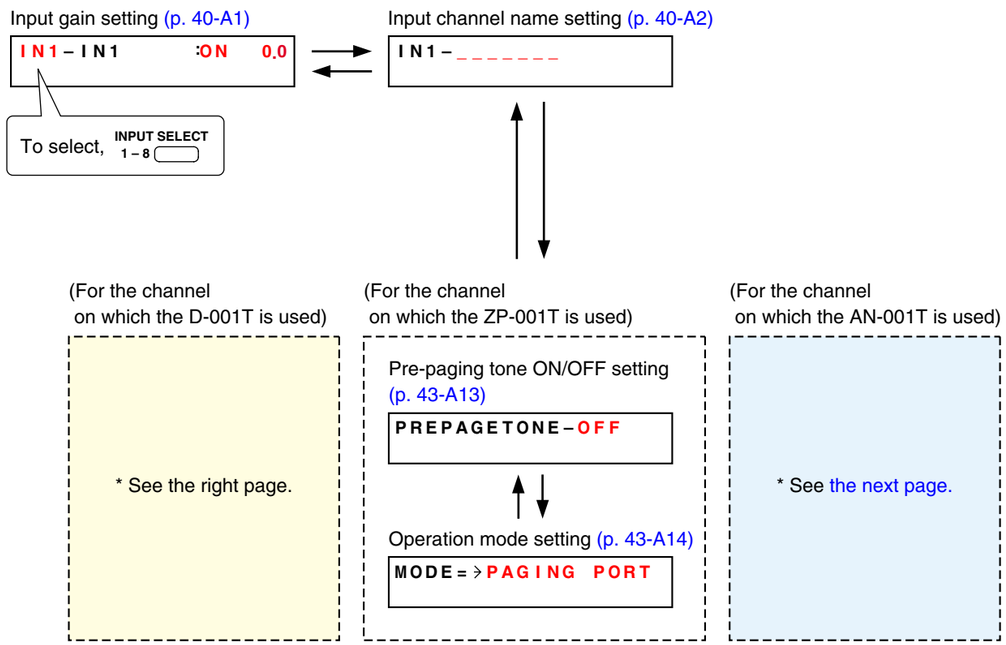
Pressing the Escape/Back key several times at any Utility setting screen reverts the display to the uppermost setting screen in the utility setting flow. The display will not change any more even if the Escape/Back key is pressed at the uppermost screen.
Pressing the Memory key at any uppermost screen reverts the display back to the normal use state.

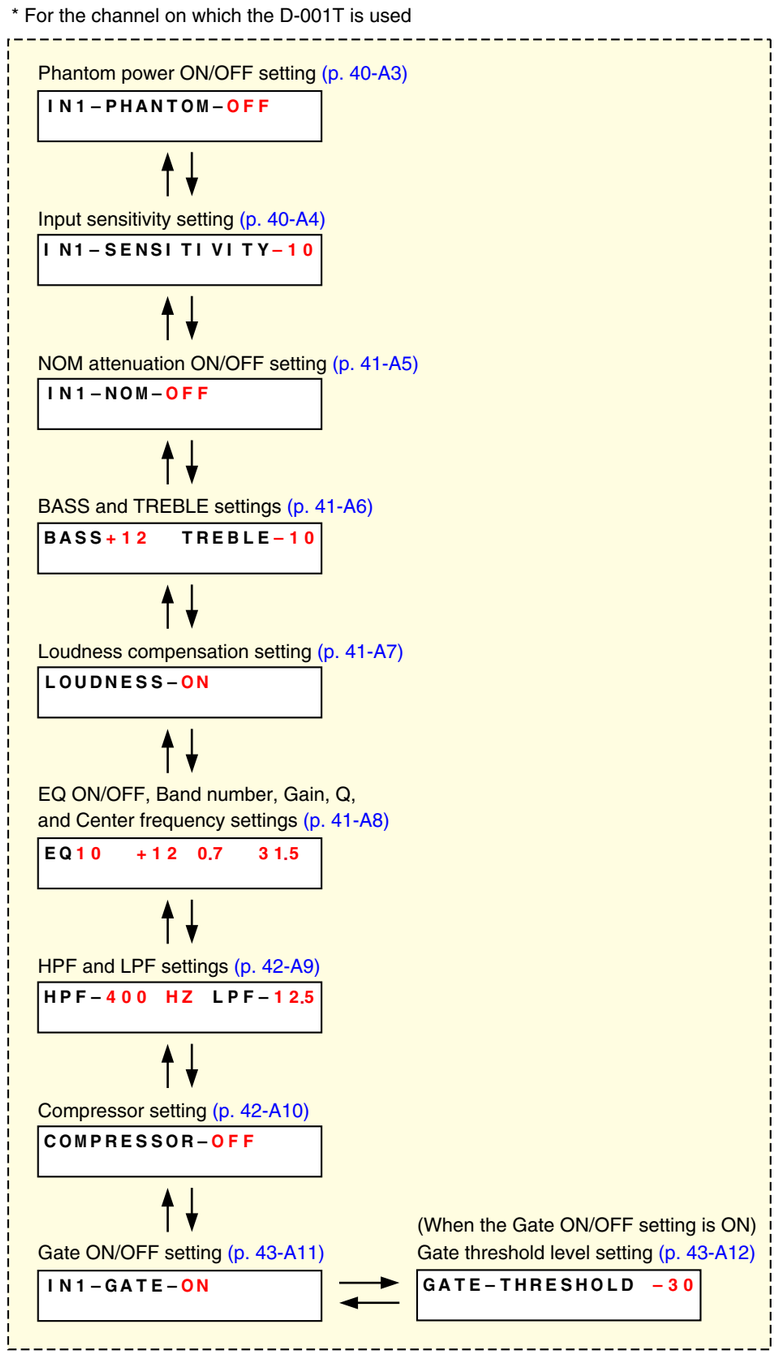


10.3. Input Setting

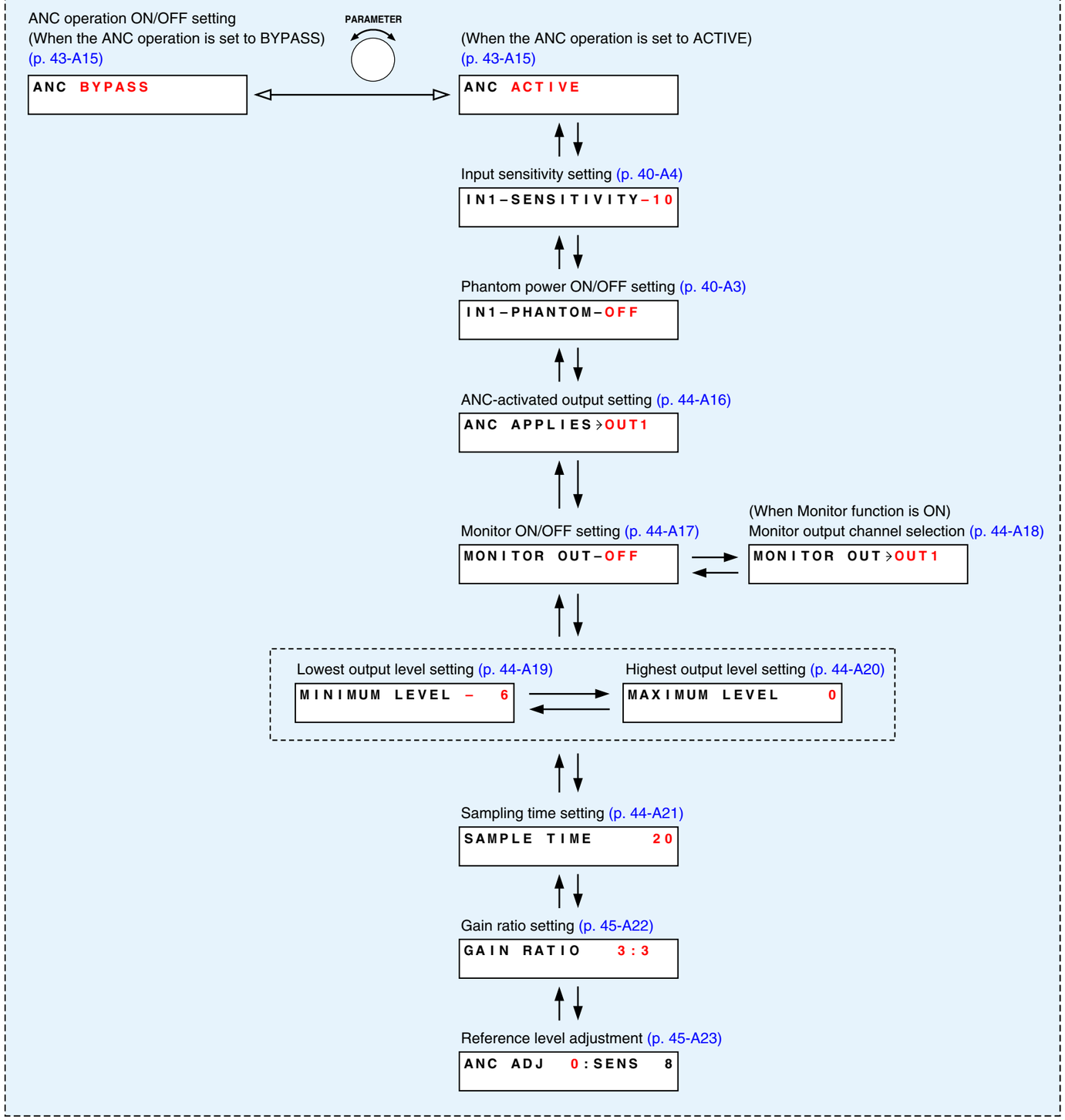
10.3.1. Setting flow chart

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
The indications of the [↑], [↑], [→], and [→] arrows represent that the screen is switched with the Screen shift key.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.


Input gain setting (p. 40-A1)
IN1 – IN1 :ON 0.0
To select, INPUT SELECT 1 – 8
Input channel name setting (p. 40-A2)
IN1 – _ _ _ _ _ _ _
(For the channel on which the D-001T is used)
* See the right page.
(For the channel on which the ZP-001T is used)
Pre-paging tone ON/OFF setting (p. 43-A13)
PREPAGETONE – OFF
Operation mode setting (p. 43-A14)
MODE = > PAGING PORT
(For the channel on which the AN-001T is used)
* See the next page.
(For the channel on which the module other than the AN-001T is used)
(When the ducker function is set to ON)
Ducker ON/OFF setting (p. 46-A24)
DUCKER OFF
Ducker priority level setting (p. 46-A25)
DUCKER PRIORITY 1
(When the ducker function is set to ON)
Ducker depth setting (p. 46-A26)
DUCKER DEPTH OFF
Output assignment and level settings (p. 46-A27)
IN1 > OUT1 0
To select, or
Input channel name setting


* For the channel on which the D-001T is used
Phantom power ON/OFF setting (p. 40-A3)
IN1 – PHANTOM – OFF
Input sensitivity setting (p. 40-A4)
IN1 – SENSI TI VI TY – 10
NOM attenuation ON/OFF setting (p. 41-A5)
IN1 – NOM – OFF
BASS and TREBLE settings (p. 41-A6)
BASS + 12 TREBLE – 10
Loudness compensation setting (p. 41-A7)
LOUDNESS – ON
EQ ON/OFF, Band number, Gain, Q, and Center frequency settings (p. 41-A8)
EQ10 +12 0.7 31.5
HPF and LPF settings (p. 42-A9)
HPF – 400 HZ LPF – 12.5
Compressor setting (p. 42-A10)
COMPRESSOR – OFF
Gate ON/OFF setting (p. 43-A11)
IN1 – GATE – ON
(When the Gate ON/OFF setting is ON)
Gate threshold level setting (p. 43-A12)
GATE – THRESHOLD – 30

* For the channel on which the AN-001T is used



10.3.2. Input setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

(A1) Input gain setting

Select the input channel using the Input channel selection key.
Confirm the selection by setting the Input channel ON/OFF key to ON.
Set the input channel gain using the Input volume control.

Setting Range	Input Channel Selection	1 – 8 (default: 1)
	Channel Control	ON (default), OFF
	Channel Gain	–∞, –70.0 dB to +10.0 dB (default: 0.0 dB), 0.5 dB steps

(A2) Input channel name setting

The flashing portion is the cursor position for entering channel name characters.
Select a character from the alphanumeric character list by rotating the Parameter setting knob, then move the cursor with the Right shift key.
Entering a new name overwrites the existing name, if there is.
To delete the character, select [_] (under-bar) with the Parameter setting knob. A space character cannot be entered.
Up to 7 characters can be used to set the name.
Even when an input channel name has been set, some setting screens display the channel number, not the set name.
When an input channel is stereo-linked (p. 56-C1), the name entry screen only for the odd channel is displayed.

Setting Range	7 characters (default: IN1 – 8)

(A3) Phantom power ON/OFF setting
(when the D-001T is used or when the AN-001T is used and ANC operation is set to ACTIVE)

Set the Phantom power to ON or OFF.
The Phantom power cannot be set to ON for the stereo-linked input channel.

Setting Range	ON, OFF (default)

- ON: Supplies the phantom power.
- OFF: Does not supply the phantom power.

(A4) Input Sensitivity setting
(when the D-001T is used or when the AN-001T is used and ANC operation is set to ACTIVE)

Select the input sensitivity from the following 9 levels depending on the input sources:

Setting Range	–60, –54, –48, –42, –36, –30, –24, –18, –10 dB (default)

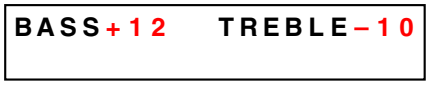
(A5) NOM attenuation ON/OFF setting (when the D-001T is used)

Set the NOM attenuation function (p. 26) to ON or OFF.
This function relates to the Gate ON/OFF setting and Gate threshold setting that appear later.
The NOM attenuation cannot be set to ON for the stereo-linked input channel.

Setting Range	ON, OFF (default)

- ON: Activates the NOM attenuation function.
- OFF: The NOM attenuation function does not work.

(A6) BASS and TREBLE settings (when the D-001T is used)



Rotate the Parameter setting knob to set gains.
Press the Right or Left shift key to select BASS or TREBLE, of which gain value that flashes can be adjusted.

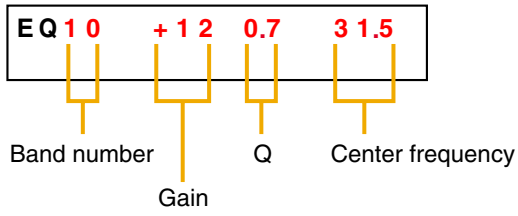
Setting Range	–12 dB to +12 dB (default: 0 dB), 1 dB steps

(A7) Loudness compensation setting (when the D-001T is used)

Rotate the Parameter setting knob to set the loudness compensation function ON/OFF.
Setting ON boosts low frequencies.

Setting Range	ON, OFF (default)

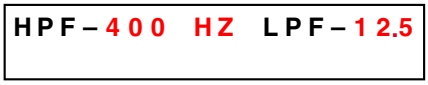
(A8) EQ ON/OFF, Band number, Gain, Q, and Center frequency settings (when the D-001T is used)



The indications on the right of "EQ" turn on and off as the Parameter setting knob is rotated.
When the indication is displayed, EQ is ON and a band number, gain, Q, and center frequency are displayed in this order from left to right. Use the Parameter setting knob to change each parameter, and the Left and Right keys to move the setting items.

Setting Range	EQ	ON, OFF (default)
	EQ Band Number	01 to 10 (default: 01)
	Gain	–12 dB to +12 dB (default: 0 dB), 1 dB steps
	Q	0.3, 0.5, 0.7, 1, 1.5 (default), 2, 3, 5
	Center Frequency	20, 25, 31.5 (default), 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1 k, 1.25 k, 1.6 k, 2 k, 2.5 k, 3.15 k, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz

(A9) HPF and LPF settings (when the D-001T is used)



Rotate the Parameter setting knob to set the cut-off frequencies.
Press the Right or Left shift key to select HPF or LPF, of which parameter that flashes can be adjusted.

Setting Range	HPF	OFF (default), 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400 Hz
	LPF	OFF (default), 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz

(A10) Compressor setting (when the D-001T is used)

Setting Range	OFF (default), 1, 2, 3, 4, 5

Use the compressor to prevent power amplifier overload or to produce more easily heard sound by averaging the audio level. The number shows the compressor's effectiveness level, which can be set by rotating the Parameter setting knob.

- 1 (Peak limiter)
  Provides a peak limiter function that protects amplifiers and speakers against damage caused by an excessive signal input.
  This level is suited to speech applications.

- 2 (Peak limiter)
  Provides a peak limiter function that protects amplifiers and speakers against damage caused by an excessive signal input.
  This level is suited to musical applications.

- 3 (Sonic normalizer)
  Equalizes the sound volume of reproduced BGM among CDs or pieces of music by boosting small sounds and lowering big sounds, making the entire sound volume uniform.
  This level is suited to BGM reproduction.

- 4 (Speech leveler)
  Makes paging calls easier to hear by equalizing the difference in speech signal volume that may result from individual differences in speaker voice volumes or variations in speaker-to-microphone distances.
  Since the volume is extensively corrected, the feedback margin narrows, making it liable to occurrences of feedback. Therefore, special care must be taken when installing microphones and speakers.
  This level is suited to microphone speech applications.

- 5 (Speech leveler)
  Makes paging calls easier to hear by equalizing the difference in speech signal volume that may result from individual differences in speaker voice volumes or variations in speaker-to-microphone distances.
  This level 5 is more effective than level 4 described above. Since the volume is extensively corrected, the feedback margin narrows, making it liable to occurrences of feedback. Therefore, special care must be taken when installing microphones and speakers.
  This level is suited to microphone speech applications.

(A11) Gate ON/OFF setting (when the D-001T is used)

```
IN1–GATE–ON
```

Set the gate function (p. 26) to ON or OFF.

Setting Range	ON, OFF (default)

- ON: Activates the gate function.
- OFF: The gate function does not work.

(When the D-001T is used and the gate function is ON)
(A12) Gate threshold level setting

```
GATE THRESHOLD –30
```

Set the input sensitivity to activate the gate function (p. 26).

Setting Range	–40 to –5 dB (default: –30 dB), 5 dB steps

(A13) Pre-paging tone ON/OFF setting (when the ZP-001T is used)

```
PREPAGETONE–OFF
```

Set whether or not to sound a one-tone chime before paging.

Setting Range	ON, OFF (default)

When set to OFF, the tone does not sound at the paging telephone, either.

(A14) Operation mode setting (when the ZP-001T is used)

```
MODE=>PAGING PORT
```

Select the method of activating paging.

Setting Range	PAGING PORT (default), RING SIGNAL

- PAGING PORT: Paging is operated if a start signal (no-voltage make signal) is received from the paging port when the connection between the unit and PABX is established.
- RING SIGNAL: Paging is operated if an IR signal is received when the connection between the unit and PABX is established. The ZP-001T module functions as a telephone.

(A15) ANC operation ON/OFF setting (when the AN-001T is used and ANC operation is set to ACTIVE)

```
ANC ACTIVE
```

Set the ANC operation (p. 26) on or off.

Setting Range	ACTIVE, BYPASS (default)

- ACTIVE: Activates the ANC function.
- BYPASS: ANC function does not work.

(A16) ANC-activated output setting (when the AN-001T is used and ANC operation is set to ACTIVE)

```
ANC  APPLIES›OUT1
```

Set on which output channel the ANC function works.

Setting Range	OUT1 – 2, Max. 8 when T-001Ts are used (default: OUT1)

(A17) Monitor ON/OFF setting (when the AN-001T is used and ANC operation is set to ACTIVE)

```
MONITOR  OUT–OFF
```

Set to ON or OFF the monitor function that permits the ambient noise input signal to be output.

Setting Range	ON, OFF (default)

- ON: Outputs signals to be monitored.
- OFF: Does not output signals to be monitored.

(A18) Monitor output channel selection
(when the AN-001T is used, the ANC operation is ACTIVE, and the Monitor function is ON)

```
MONITOR  OUT–OUT1
```

Select the output channel on which signals to be monitored are output.

Setting Range	OUT1 – 2, Max. 8 when T-001Ts are used (default: OUT1)

(A19) Lowest output level setting (when the AN-001T is used and ANC operation is set to ACTIVE)

```
MINIMUM  LEVEL  –   6
```

Set the lower limit of the ANC-activated output level.

Setting Range	–18, –15, –12, –9, –6 (default), –3 dB **Note:** Settable level is 3 dB or more below the upper limit (highest output level).

(A20) Highest output level setting (when the AN-001T is used and ANC operation is set to ACTIVE)

```
MAXIMUM  LEVEL      0
```

Set the upper limit of the ANC-activated output level.

Setting Range	–15, –12, –9, –6, –3, 0 (default) dB **Note:** Settable level is 3 dB or more above the lower limit (lowest output level).

(A21) Sampling time setting (when the AN-001T is used and ANC operation is set to ACTIVE)

```
SAMPLE  TIME      20
```

Set the required time to measure ambient noise. The ambient noise level is determined by being averaged over the set measuring time. When the measuring time is long, the output level changes slowly with the ambient level. However, the change in output level is not susceptible to a sudden change in ambient noise level.

Setting Range	10, 15, 20 (default), 30, 60, 120,180, 300 sec

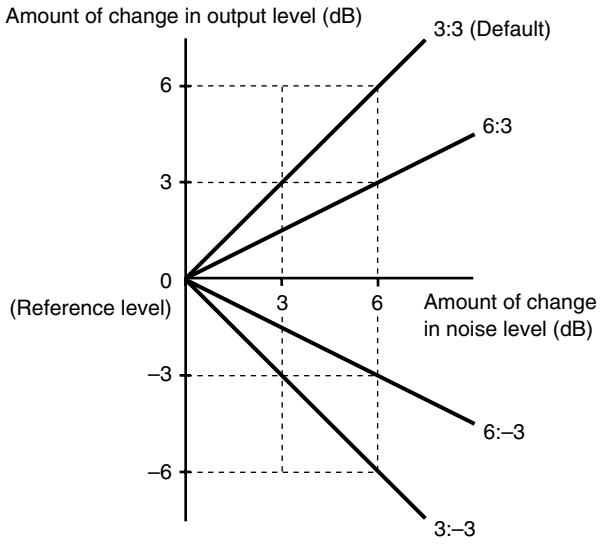
(A22) Gain ratio setting (when the AN-001T is used and ANC operation is set to ACTIVE)

Set the degree of change in the output sound level to that in ambient noise level, which is displayed as the ratio "ambient noise level : output level."

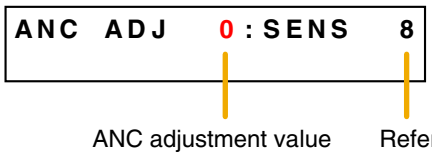
Setting Range	6:3, 5:3, 4:3, 3:3 (default), 3:4, 3:5, 3:6, 6:–3, 5:–3, 4:–3, 3:–3, 6:–3, 5:–3, 4:–3, 3:–3, 3:–4, 3:–5, 3:–6

When the ratio of output level to ambient noise level is great, the degree of change in output level becomes greater than that in ambient noise level.
The greater the amount of change in output level is, the faster the output level reaches the upper limit or lower limit, causing the sound volume not to change any more.
Contrary, when the ratio of output level to ambient noise level is small, the degree of change in output level becomes smaller than that in ambient noise level.

When the ratio of output level is positive, the output level increases as the ambient noise level increases.
When the ratio of output level is negative, the output level decreases as the ambient noise level increases.
For example, when the ratio "3 : 3" is selected, the output volume level increases by 3 dB as the ambient noise level increases by 3 dB.



(A23) Reference level adjustment (when the AN-001T is used and ANC operation is set to ACTIVE)



Adjust the reference level which is a starting point for detecting the amount of change in ambient noise level. (Refer to the previous setting item.)
Though the reference level is automatically determined according to the input sensitivity set on its setting screen, this adjustment screen allows the reference level to be manually adjusted under the actual condition that ambient noise is collected by a microphone.
Make the adjustment for the broadcast zone when it is quietest.
Adjust the on-screen ANC adjustment value with the Parameter setting knob so that the on-screen reference level becomes "0." Increase the ANC adjustment value when the reference level is higher than 0, and decrease when the reference level is lower than 0.

Setting Range	–10 to 10 dB (default: 0 dB), 1 dB steps

Note
The reference level cannot be adjusted to "0" if it is over +10 or below –10.
In this case, reset the input sensitivity (p. 39, p. 40-A4) to the value above the current level when the reference level is higher than 10, and below the current level when smaller than –10.

(A24) Ducker ON/OFF setting (when the AN-001T is not used)

Set the ducker function (p. 26) to ON or OFF.

Setting Range	ON, OFF (default)

- ON: Activates the ducker function.
- OFF: The ducker function does not work.

(When the ducker function is set to ON)
(A25) Ducker priority level setting (when the AN-001T is not used)

Set the priority level as follows: Priority 1 or 2 for the input channel on which the D-001T is used, and only Priority 2 for the input channel on which the input module other than the D-001T is used. Priority 1 is higher than Priority 2 in priority level.

Setting Range	When the D-001T is used: PRIORITY 1 (default), PRIORITY 2 When other input module is used: PRIORITY 2 (default)

The ducker function does not work among the input channels with the same priority level.
The function does not work either unless the relevant input channels are all set for the ducker function, permitting all the input signals to be mixed and output.
The input channel with the paging function has precedence over PRIORITY 1.

(When the ducker function is set to ON)
(A26) Ducker depth setting (when the AN-001T is not used)

Set how much the input signal for the channel given lower priority than that of the currently set input channel should be attenuated.

Setting Range	OFF (default), –50, –40, –30, –20, –10, 0 dB

The minus figures in dB represent amount to attenuate input signals. The larger the minus figures, the larger the amount of attenuation. Selecting "OFF" sets the attenuation to infinity, while selecting "0" sets to no attenuation, permitting all input signals to be mixed and output.

(A27) Output assignment and level settings (when the AN-001T is not used)

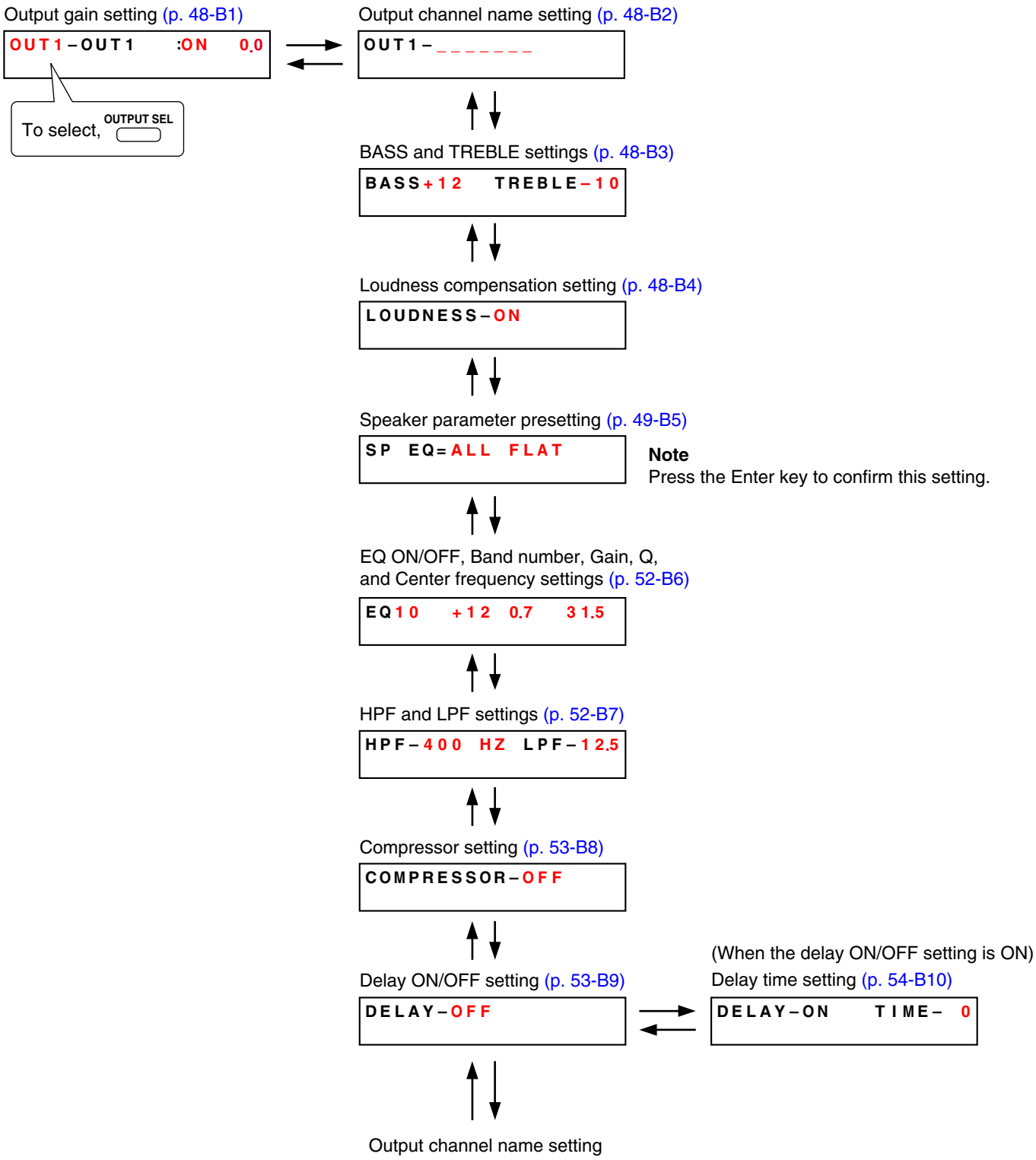
Set which output channel in what level an audio source at the currently selected input channel should be output to.
Select the output channel from Channel 1 to 8 (maximum) with the Left or Right shift key, and set the output level with the Parameter setting knob. By repeating this procedure, 2 or more output channels can be assigned.
Pressing the output channel ON/OFF key alternately switches the level between "0 dB" and "– ∞."

Setting Range	Output Channel	OUT1 – 2, Max. 8 when T-001Ts are used (default: OUT1)
	Assigned Output Level	0 dB (default) –∞, –70.0 dB to +10.0 dB, 1 dB steps

10.4. Audio Output Setting

10.4.1. Setting flow chart

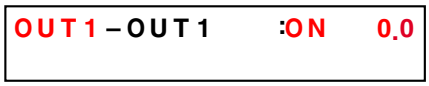
The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
The indications of the [↑], [↑], [→], and [→] arrows represent that the screen is switched with the Screen shift key.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.


Output gain setting (p. 48-B1)
OUT1–OUT1 :ON 0.0
To select, OUTPUT SEL
Output channel name setting (p. 48-B2)
OUT1–_ _ _ _ _ _ _
BASS and TREBLE settings (p. 48-B3)
BASS+12 TREBLE–10
Loudness compensation setting (p. 48-B4)
LOUDNESS–ON
Speaker parameter presetting (p. 49-B5)
SP EQ=ALL FLAT
Note
Press the Enter key to confirm this setting.
EQ ON/OFF, Band number, Gain, Q,
and Center frequency settings (p. 52-B6)
EQ10 +12 0.7 31.5
HPF and LPF settings (p. 52-B7)
HPF–400 HZ LPF–12.5
Compressor setting (p. 53-B8)
COMPRESSOR–OFF
Delay ON/OFF setting (p. 53-B9)
DELAY–OFF
(When the delay ON/OFF setting is ON)
Delay time setting (p. 54-B10)
DELAY–ON TIME– 0
Output channel name setting

10.4.2. Audio output setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

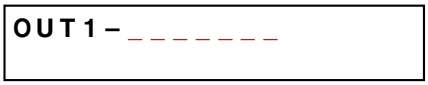
(B1) Output gain setting



Select the output channel using the Output channel selection key.
Confirm the selection by setting the Output channel ON/OFF key to ON.
Set the output channel gain using the Output volume control.

Setting Range	Output Channel	OUT1 – 2, Max.8 when the 3 T-001Ts are used (default: OUT1)
	Channel Control	ON (default), OFF
	Channel Gain	–∞, –70.0 dB to +10.0 dB (default: 0.0 dB), 0.5 dB steps

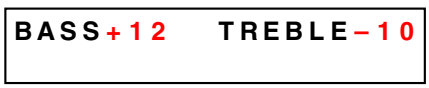
(B2) Output channel name setting



The flashing portion is the cursor position for entering channel name characters.
Select a character from the alphanumeric character list by rotating the Parameter setting knob, then move the cursor with the Right shift key.
Entering a new name overwrites the existing name, if there is.
To delete the character, select [_] (under-bar) with the Parameter setting knob. A space character cannot be entered.
Up to 7 characters can be used to set the name.
Even when an output channel name has been set, some setting screens display the channel number, not the set name.
When the output channel is stereo-linked (p. 56-C1), the name entry screen only for the odd channel is displayed.

Setting Range	7 characters (default setting: OUT1 – 8)

(B3) BASS and TREBLE settings



Rotate the Parameter setting knob to set gains.
Press the Right or Left shift key to select BASS or TREBLE, of which gain value that flashes can be adjusted.

Setting Range	–12 dB to +12 dB (default: 0 dB), 1 dB steps

(B4) Loudness compensation setting

Rotate the Parameter setting knob to set the loudness compensation function ON/OFF.
Setting ON boosts low frequencies.

Setting Range	

(B5) Speaker parameter presetting

Optimum equalization can be automatically set depending on the type of speaker to be used.
If this function is not used or the speaker to be used is not included in a speaker list, set "SP EQ" to ALL FLAT. When the speaker type is selected from the speaker list, the number of bands that can be set on the next EQ setting screen decreases by the number of bands to be used in the setting performed on this screen. The number of bands to be used differs depending on the type of speaker.
To perform this setting, select the speaker model from the speaker list and press the Enter key to confirm.

Setting Range	ALL FLAT (default), F-122, F-122SUBWFER (F-122 with a subwoofer), H-1, H-1SUBWOOFER (H-1 with a subwoofer), H-2, H-2SUBWOOFER (H-2 with a subwoofer), H-3, H-3SUBWOOFER (H-3 with a subwoofer), HB-1, FB-100, SW FOR F-122 (subwoofer for F-122), SR-S4 SINGLE (SR-S4 driven by a single amplifier), HX-5_E, HX-5_E LOCUT (HX-5_E for low-cut), FB-120

[Speaker EQ settings]

	ALL FLAT (Default)		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	0	31.5	1.5
EQ 02	0	63	1.5
EQ 03	0	125	1.5
EQ 04	0	250	1.5
EQ 05	0	500	1.5
EQ 06	0	1 k	1.5
EQ 07	0	2 k	1.5
EQ 08	0	5 k	1.5
EQ 09	0	8 k	1.5
EQ 10	0	16 k	1.5

	F-122			F-122SUBWFER*1		
	GAIN (dB)	FREQ (Hz)	Q	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen			Settable EQ bands in the EQ setting screen		
EQ 02						
EQ 03						
EQ 04 (HPF)	——	37.5	0.5	——	45	0.5
EQ 05 (HPF)	——	37.5	0.7	——	45	0.7
EQ 06	+11.5	85	2.871	+6.5	80	1.414
EQ 07	–2.5	212	0.667	–4.5	180	0.667
EQ 08	–8	900	2.871	–8	900	2.871
EQ 09	+8	10 k	0.267	+8	11.2 k	0.267
EQ 10 (LPF)	——	20 k	0.7	——	20 k	0.7

*1 F-122 with a subwoofer

	H-1			H-1SUBWOOFER*2		
	GAIN (dB)	FREQ (Hz)	Q	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen			Settable EQ bands in the EQ setting screen		
EQ 02						
EQ 03						
EQ 04						
EQ 05						
EQ 06 (HPF)	——	118	0.707	——	118	0.707
EQ 07	+10	125	1.8	+4	125	1.8
EQ 08	–6.5	220	1.414	–6.5	220	1.414
EQ 09	+1.5	5 k	0.305	+1.5	5 k	0.305
EQ 10 (LPF)	——	15.8 k	0.5	——	15.8 k	0.5

*2 H-1 with a subwoofer

	H-2			H-2SUBWOOFER*3		
	GAIN (dB)	FREQ (Hz)	Q	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen			Settable EQ bands in the EQ setting screen		
EQ 02						
EQ 03						
EQ 04						
EQ 05						
EQ 06 (HPF)	——	63	0.707	——	63	0.707
EQ 07	+10	100	1.871	+2.5	100	1.871
EQ 08	–5	200	1.414	–5	200	1.414
EQ 09	+1.5	5 k	0.305	+1.5	5 k	0.305
EQ 10 (LPF)	——	15.8 k	0.5	——	15.8 k	0.5

*3 H-2 with a subwoofer

	H-3			H-3SUBWOOFER*4		
	GAIN (dB)	FREQ (Hz)	Q	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen			Settable EQ bands in the EQ setting screen		
EQ 02						
EQ 03						
EQ 04						
EQ 05						
EQ 06 (HPF)	——	63	0.707	——	63	0.707
EQ 07	+9	100	2.871	+5	100	2.871
EQ 08	–8	220	2.871	–8	220	2.871
EQ 09	+5	500	2.871	+5	500	2.871
EQ 10	+1.5	5 k	0.305	+1.5	5 k	0.305

*4 H-3 with a subwoofer

	HB-1		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen		
EQ 02			
EQ 03			
EQ 04			
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (HPF)	——	40	1
EQ 10 (LPF)	——	100	1

	FB-100		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen		
EQ 02			
EQ 03			
EQ 04			
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (HPF)	——	40	1
EQ 10 (LPF)	——	100	1

	SW FOR F-122*5		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen		
EQ 02			
EQ 03			
EQ 04			
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (LPF)	——	100	0.5
EQ 10	+2.5	112	0.667

*5 Subwoofer for F-122

	SR-S4 SINGLE*6		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen		
EQ 02			
EQ 03			
EQ 04			
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (HPF)	——	60	1.226
EQ 10	+5	16 k	1.414

*6 SR-S4 driven by a single amplifier

	HX-5_E*7		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen		
EQ 02			
EQ 03			
EQ 04			
EQ 05			
EQ 06 (HPF)	——	60	2.053
EQ 07	+2	65	1.414
EQ 08	–3	800	0.7
EQ 09	–4	2.5 k	2.997
EQ 10	+5	5 k	0.305

*7 HX-5 Series

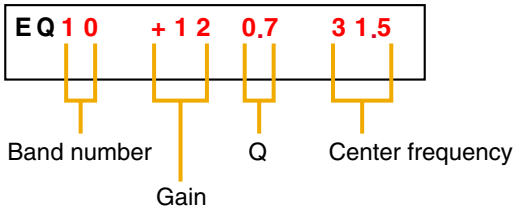
	HX-5_E LOCUT*8		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen		
EQ 02			
EQ 03			
EQ 04			
EQ 05			
EQ 06			
EQ 07 (HPF)	——	90	1.30656
EQ 08	–3	800	0.7
EQ 09	–4	2.5 k	2.997
EQ 10	+5	5 k	0.305

*8 HX-5 Series for low-cut use

	FB-120*9		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen		
EQ 02			
EQ 03			
EQ 04			
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (HPF)	——	40	2.053
EQ 10 (LPF)	——	100	1

*9 FB-120 Series

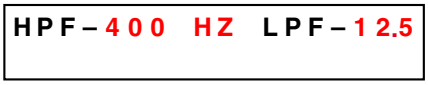
(B6) EQ ON/OFF, Band number, Gain, Q, and Center frequency settings



The indications on the right of "EQ" turn on and off as the Parameter setting knob is rotated.
When the indication is displayed, EQ is ON and a band number, gain, Q, and center frequency are displayed in this order from left to right. Use the Parameter setting knob to change each parameter, and the Left and Right keys to move the setting items.

Setting Range	EQ	ON, OFF (default)
	EQ Band Number	01 to 10 (default: 01)
	Gain	–12 dB to +12 dB (default: 0 dB), 1 dB steps
	Q	0.3, 0.5, 0.7, 1, 1.5 (default), 2, 3, 5
	Center Frequency	20, 25, 31.5 (default), 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1 k, 1.25 k, 1.6 k, 2 k, 2.5 k, 3.15 k, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz

(B7) HPF and LPF settings



Rotate the Parameter setting knob to set the cut-off frequencies.
Press the Right or Left shift key to select HPF or LPF, of which parameter that flashes can be adjusted.

Setting Range	HPF	OFF (default), 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400 Hz
	LPF	OFF (default), 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz

(B8) Compressor setting

COMPRESSOR – OFF

Setting Range	OFF (default), 1, 2, 3, 4, 5

Use the compressor to prevent power amplifier overload or to produce more easily heard sound by averaging the audio level. The number shows the compressor's effectiveness level, which can be set by rotating the Parameter setting knob.

- 1 (Peak limiter)
  Provides a peak limiter function that protects amplifiers and speakers against damage caused by an excessive signal input.
  This level is suited to speech applications.
- 2 (Peak limiter)
  Provides a peak limiter function that protects amplifiers and speakers against damage caused by an excessive signal input.
  This level is suited to musical applications.
- 3 (Sonic normalizer)
  Equalizes the sound volume of reproduced BGM among CDs or pieces of music by boosting small sounds and lowering big sounds, making the entire sound volume uniform.
  This level is suited to BGM reproduction.
- 4 (Speech leveler)
  Makes paging calls easier to hear by equalizing the difference in speech signal volume that may result from individual differences in speaker voice volumes or variations in speaker-to-microphone distances.
  Since the volume is extensively corrected, the feedback margin narrows, making it liable to occurrences of feedback. Therefore, special care must be taken when installing microphones and speakers.
  This level is suited to microphone speech applications.
- 5 (Speech leveler)
  Makes paging calls easier to hear by equalizing the difference in speech signal volume that may result from individual differences in speaker voice volumes or variations in speaker-to-microphone distances.
  This level 5 is more effective than level 4 described above. Since the volume is extensively corrected, the feedback margin narrows, making it liable to occurrences of feedback. Therefore, special care must be taken when installing microphones and speakers.
  This level is suited to microphone speech applications.

(B9) Delay ON/OFF setting

DELAY – OFF

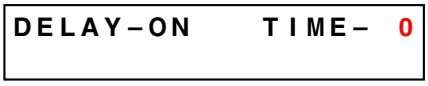
Set the delay function to ON or OFF.
When ON, the delay time setting follows.

Setting Range	ON, OFF (default)

- ON: The delay function works.
- OFF: The delay function does not work.

(Only when the delay function is set to ON)

(B10) Delay time setting



Set the delay time.

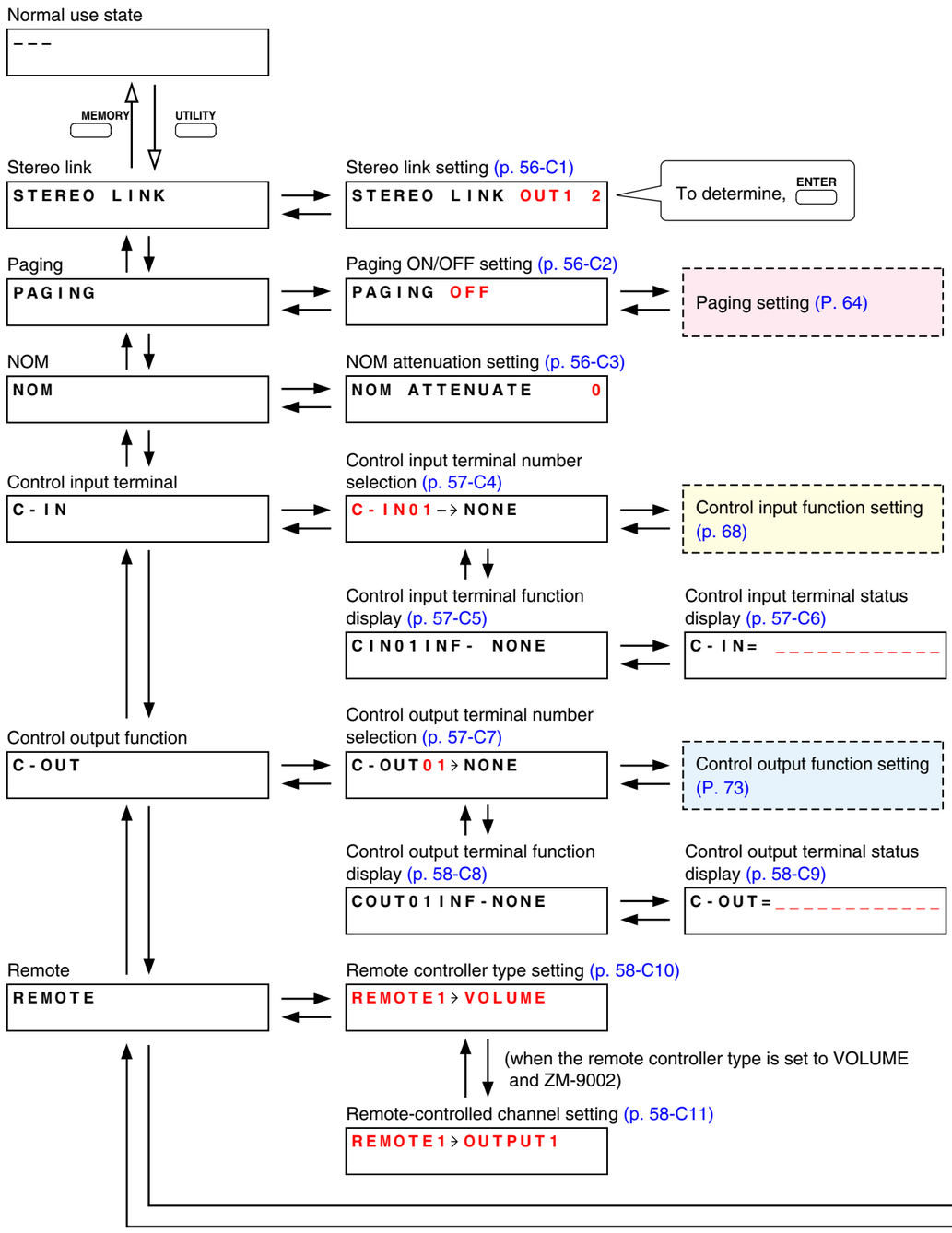
Setting Range	0 – 40 ms (default: 0), 1 ms steps **Note** Maximum 40 ms total of time for Output channels 1 and 2. When the T-001T is used, maximum 40 ms total of time for each pair of Output channels 3 and 4, 5 and 6, and 7 and 8.

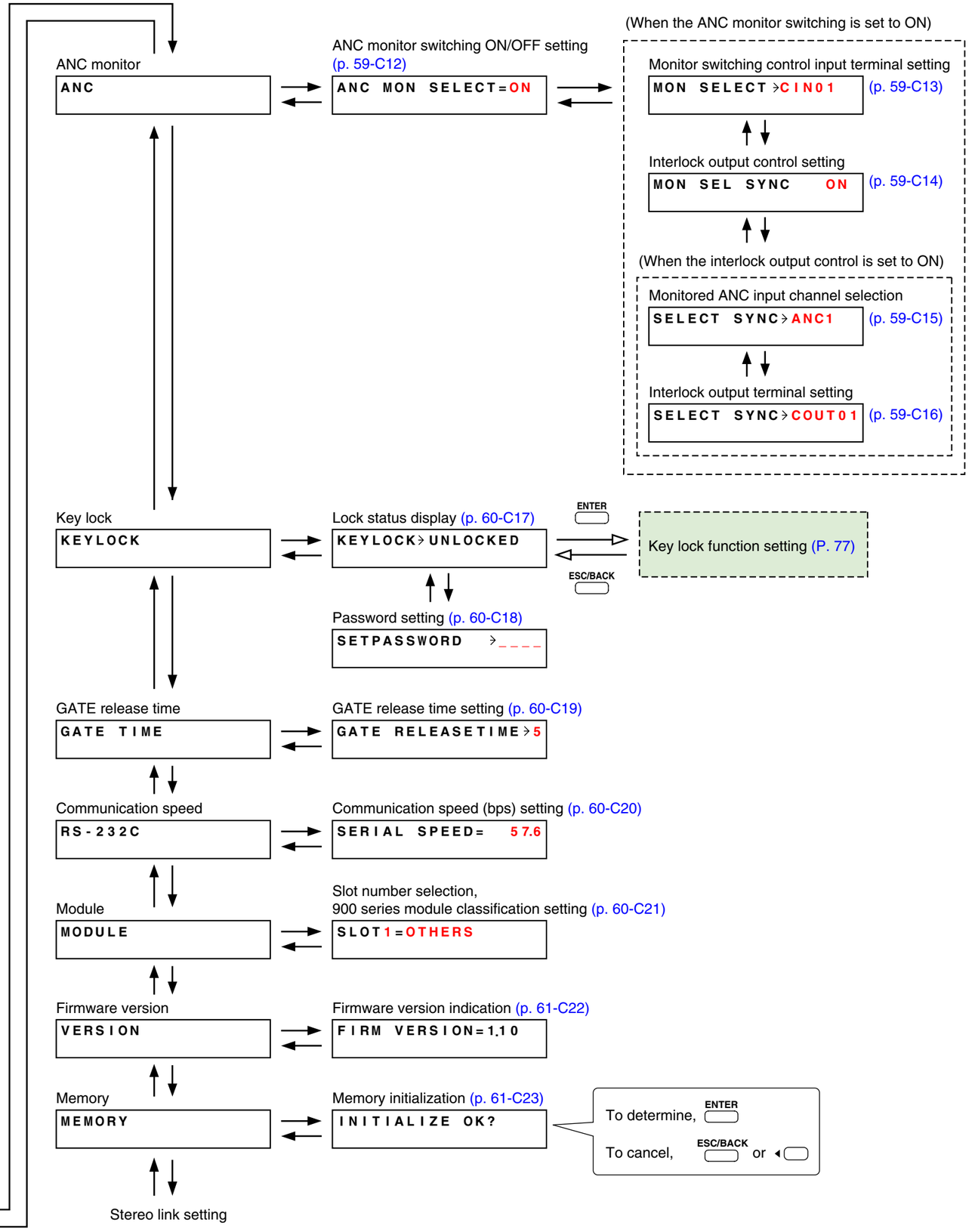
Delay time can be adjusted to up to 40 ms in total for the amplifier's Output channels 1 and 2, and for the paired output channel when the T-001T is used.
For example, when the delay time for Output channel 1 is set to "30," set that for Output channel 2 to "10" or less. If the delay time for Output channel 2 is set to over "10," that for Output channel 1 is automatically adjusted so that the total delay time for both channels becomes 40.

10.5. Utility Setting

10.5.1. Setting flow chart

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
The indications of the [↑], [↑], [→], and [→] arrows represent that the screen is switched with the Screen shift key.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.





10.5.2. Utility setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

(C1) Stereo link setting

Set a paired input or output channel as stereo input or stereo output so that both channels can be synchronously operated. Select a channel pair with the Parameter setting knob, and determine it with the Enter key. Pressing the Enter key again cancels this setting. By repeating this procedure, up to 8 channels (4 pairs) each for input and output can be set when the number of input and output channels is maximum.
When the paired channel is stereo-linked, an equal mark "=" appears between both channel numbers.
Parameter settings for the stereo-linked channels synchronize. Parameters that can be synchronized are as follows:

Input channel: Channel gain, Channel ON/OFF, and D-001T's parameters (where Phantom power and NOM attenuation function are fixed to OFF)

Output channel: Channel gain, Channel ON/OFF, Channel name, Bass, Treble, Loudness compensation, EQ, HPF, LPF, Compressor, Delay, and T-001T's parameters (where Phantom power and NOM attenuation function are fixed to OFF)

Setting Range	Default: No channel is stereo-linked. **Note** The ZP-001T channel cannot be stereo-linked. Up to 8 channels (4 pairs) each for input and output can be set as follows when the number of input and output channels is maximum: OUT 1 – 2, OUT 3 – 4, OUT 5 – 6, OUT 7 – 8, IN 1 – 2, IN 3 – 4, IN 5 – 6, and IN 7 – 8

(C2) Paging ON/OFF setting

Set the paging function to ON or OFF.

Setting Range	ON, OFF (default)

- ON: Enables the paging function.
- OFF: Paging function does not work.

When set to ON, refer to p. 64 for the paging setting flow chart.

(C3) NOM attenuation setting

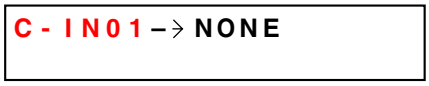
Set the amount of NOM (Number of Open Microphones) attenuation.
The NOM attenuation function automatically reduces an output gain to prevent the entire volume from being excessively raised due to open microphones.
When the value to be set here is A and the number of open microphones is N, the attenuation gain is given by the following equation:

$$\text{Attenuation gain} = A \times \log_{10} N$$

This function is valid only for the D-001T's input channels having the NOM attenuation function.

Setting Range	0 – 20 (default: 0)

(C4) Control input terminal number selection



Setting Range	C-IN01 – 04 (C-IN01 – 12 when C-001T is used), ZM-IN01 – 12* (default: C-IN01) * Selectable only when the Remote controller type (p. 58-C10) is set to ZM-9001 or ZM-9002.

Set the control input terminal number to be assigned to the control input function.
The screen indications ZM-IN01 – 06 or 01 – 04 correspond to the control buttons of the ZM-9001 or ZM-9002 connected to the 9000 Series amplifier's remote volume control terminal 1 (REMT VOL 1). The indications of ZM-IN with subsequent numbers correspond to ZM-9001's or ZM-9002's control buttons connected to the remote volume control terminal 2 (REMT VOL 2).
To set a terminal number, refer to p. 68 for the flow chart of the control input function setting.

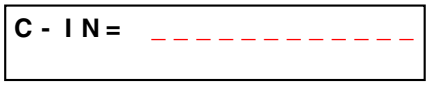
Note: The control input terminal having the PG TRIG (paging trigger) function is represented as "NONE" on the screen.

(C5) Control input terminal function display

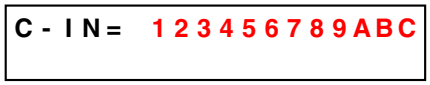
Displays the function assigned to the control input terminal.
The screen indications represent the following functions:

- NONE: No function is assigned.
- PG TRIG: Paging activation
- SCENE: Scene memory recall
- VOLUP: Volume up
- VOLDOWN: Volume down
- CH ON: Channel ON
- CH MUTE: Channel mute
- EMG MUTE: Emergency mute activation (All output channel mute)
- POWER: Power ON

(C6) Control input terminal status display (when all are open)



(C6) Control input terminal status display (when all are closed)



Status of all control input terminals can be confirmed on the screen, with the terminal Nos. 1 – 12 arranged in numerical order from left to right.
When closed, the terminal number is indicated by alpha-numerals. Alphabet A represents the terminal number 10, B represents 11, and C represents 12.
An open terminal is indicated by an underscore "_".

(C7) Control output terminal number selection

Setting Range	C-IN01 – 04, C-IN01 – 12 when C-001T is used

Set the control output terminal number to be assigned to the control output function.
To set a terminal number, refer to p. 73 for the flow chart of the control output function setting.

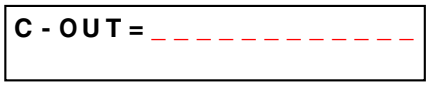
Note: The control output terminal having the function of CH MUTE (Channel mute), EMG MUTE (Emergency mute, or all output channel mute), or PG OUT (Paging activation) is represented as "NONE" on the screen.

(C8) Control output terminal function display

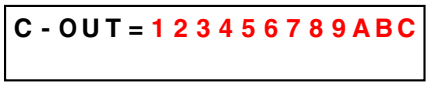
Displays the function assigned to the control output terminal.
The screen indications represent the following functions:

- NONE: No function is assigned.
- POWER: Power ON
- SCENE: Scene memory recall
- CH ON: Channel ON
- CH MUTE: Channel mute
- EMG MUTE: Emergency mute activation (All output channel mute)
- PG OUT: Paging activation

(C9) Control output terminal status display (when all are open)

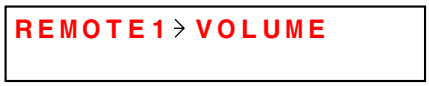


(C9) Control output terminal status display (when all are closed)



Status of all control output terminals can be confirmed on the screen, with the terminal Nos. 1 – 12 arranged in numerical order from left to right.
When closed, the terminal number is indicated by alpha-numerals. Alphabet A represents the terminal number 10, B represents 11, and C represents 12.
An open terminal is indicated by an underscore "_".

(C10) Remote controller type setting



Set the type of remote controller connected to the remote control input terminals.
Use the Left and Right shift keys to move the setting items on the screen.

Setting Range	Remote Volume Terminal Number	REMOTE 1, REMOTE 2
	Controller type	OFF (default), VOLUME, ZM-9001, ZM-9002

- OFF: Select this setting when no remote controller is connected.
- VOLUME: Select this setting when a normal variable resistor or variable DC power supply unit is connected.
- ZM-9001: Select this setting when the ZM-9001 is connected. This setting adds 6 control inputs. These inputs are assigned the functions in the setting screens on p. 69-E1.
- ZM-9002: Select this setting when the ZM-9002 is connected. This setting adds 4 control inputs and 1 remote volume control. These inputs are assigned the functions in the setting screens on p. 69-E1.

(C11) Remote-controlled channel setting
(when the remote controller type is set to VOLUME or ZM-9002)

Select the input or output channel of which volume you want to remotely control by using the control input terminals on the rear panel or ZM-9002's volume control.
The REMOTE 1 on the screen represents the REMT VOL 1 of control input terminal, and the REMOTE 2 represents the REMT VOL 2.
Use the Left and Right shift keys to move the setting items on the screen.

Setting Range	Remote Volume Terminal Number	REMOTE 1, REMOTE 2
	Remote-controlled channel	OFF, INPUT 1 – 8, OUTPUT 1 – 2, Max. OUTPUT 8 when T-001Ts are used (default for REMOTE 1: OUTPUT 1, REMOTE 2: OUTPUT 2)

(C12) ANC monitor switching ON/OFF setting

If there are 2 or more ANC inputs, set whether or not ANC inputs to be monitored are switched.

Setting Range	OFF (default), ON

(C13) Monitor switching control input terminal setting (When the ANC monitor switching is set to ON)

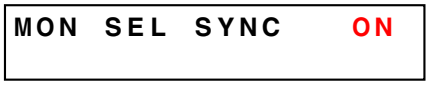
Select the control input terminal to switch the ANC inputs* to be monitored.
Selecting the terminal overwrites the previously set function on it if there is.

Setting Range	CIN01 – 04, CIN01 – 12 when C-001T is used (default: CIN01)

Each time the designated terminal is closed, the ANC inputs to be monitored are switched in numerical order from ANC input 1.

* ANC inputs are the input channels of AN-001T Ambient Noise Sensor Input module. One AN-001T module has 2 input channels. When 2 AN-001T modules are mounted, the AN-001T's inputs in the slot with smaller number correspond to ANC Input channels 1 and 2, and another's inputs in another slot to ANC Input channels 3 and 4.

(C14) Interlock output control setting (When the ANC monitor switching is set to ON)



Perform ON/OFF setting for the function that closes the control output terminal in synchronization with the control input terminal closure of the set number.

Setting Range	OFF (default), ON

(C15) Monitored ANC input channel selection
(When the ANC monitor switching is set to ON, and the interlock output control to ON)

Select the ANC input channel. Each channel for which the monitor function is set to ON can be selected.

Setting Range	ANC 1 – 4 (Only ANC input channels for which the monitor function is ON)

(C16) Interlock output terminal setting
(When the ANC monitor switching is set to ON, and the interlock output control to ON)

Set the control output terminal which is closed in synchronization with switching to the monitored ANC input channel.
Assigning the function to this terminal overwrites the previously set function on it if there is.

Setting Range	COUT01 – 04, COUT01 – 12 when C-001T is used (default: COUT01)

(C17) Lock status display

Setting Range	UNLOCKED (default), LOCKED

The above screen displays the current key lock status.
When a key other than the Utility key is locked, "UNLOCKED" is indicated. If a locked key is pressed, the display changes to the password entry screen. To enter the key lock setting flow, press the Enter key.
For the setting items, refer to p. 78 "Key lock function setting items."

(C18) Password setting

Passwords can be set only when the keys are not locked.
Use the Input channel selection key to set the password and use the Left and Right shift keys to move characters. For password setting procedure, refer to p. 80 "Password setting."

(C19) GATE release time setting

Sets the time (seconds) required for the muted signal to return to the original level after the GATE activating input signal decreases below the threshold level.

Setting Range	1 – 8 (default: 5)

(C20) Communication speed (bps) setting

Setting Range	9.6 k, 19.2 k, 38.4 k, 57.6 k (default), 115.2 k

(C21) Slot number selection and 900 series module classification setting

Setting Range	Slot Number	1 – 8 (default: 1)
	Module Classification	OTHERS (default), B-01, B-11, B-21, B-41, E-03, E-04, E-05, E-06, E-07, L-01, L-11, L-41, M-01, M-03, M-11, M-21, M-41, M-51, M-61, S-01, S-02, S-04, S-20S, T-01, T-02, T-12, U-01, U-03, U-11, U-12, U-13, U-14, U-21, U-43, U-61, V-01, ML-11T, NONE

Use the Left and Right shift keys to move the setting items on the screen.
For slots equipped with 9000 Series plug-in modules, their module model numbers are automatically displayed and cannot be changed. For slots equipped with 900 Series input modules, select their model numbers using the Parameter setting knob.
The settings performed here are merely displayed, and have no effect on the audio input and other settings.
Setting the open slot to NONE extinguishes the indicators of the corresponding Input channel and its subsequent channels on the front panel. Besides, the channels do not appear on any setting screen.

(C22) Firmware version indication

```
FIRM VERSION=1.10
```

Displays the firmware version number.

(C23) Memory initialization

```
INITIALIZE OK?
```

Pressing the Enter key initializes all of the unit's current settings to the factory default setting.

10.6. Paging Setting

10.6.1. Paging function

Paging function enables paging broadcasts from the outside to be made to the closed space(s) where the 9000 Series amplifier is used.
To use the paging function, perform the paging function setting as well as the audio input and output parameter settings.
In the audio input parameter setting, be sure to set the Ducker function to ON. Doing otherwise causes the paging calls to mix with input signal being broadcast.

When the ZP-001T is used, paging calls are output at the output channels selected by telephone dial operation.
When an input module other than ZP-001T is used, paging calls can be made to up to 4 paging zones to which up to 8 output channels can be assigned.
Output channels can be redundantly assigned to each zone.

Paging prohibited channels can also be set.
When paging calls are initiated using an input module other than the ZP-001T, if an output channel is set as a paging prohibited channel, no paging calls are made to all of the paging zones to which the output channel is assigned.
When paging calls are initiated using the ZP-001T, set all the output channels to be paging-disabled for paging prohibition.

Be sure to set the paging input channel to ON. Otherwise, paging calls cannot be performed.

[Example of paging zone assignment and paging prohibited zone setting]
(When Trigger is set to "C-IN" or "VOX")

Assume the following situations:

- You use a ballroom in 3 divided zones on Date A, and in 2 divided zones on Date B.
- Different broadcast is made to each zone.
- The speakers SP1 to SP8 in the ballroom are connected to the unit's Output channels 1 to 8, respectively.

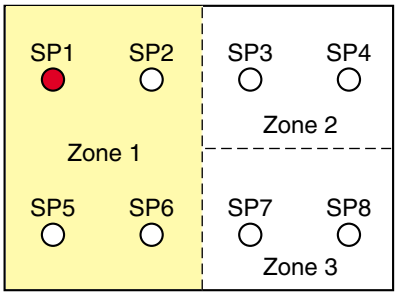
If you want to use Scene 01 (a broadcast pattern saved in the unit) and set Zone 1 as a paging prohibited zone on Date A, setting any one of Output channels 1, 2, 5, and 6 as a paging prohibited channel disables the broadcasts to Zone 1.

Similarly, if you want to use Scene 02 and set Zone 2 as a paging prohibited zone on Date B, setting either of Output channels 4 or 8 as a paging prohibited channel disables the broadcasts to Zone 2.

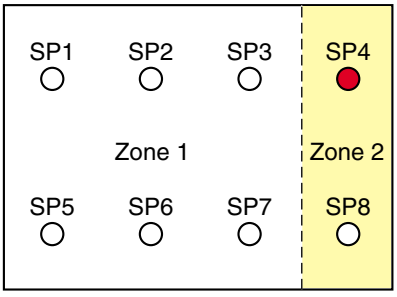
[Zone division]

Ballroom

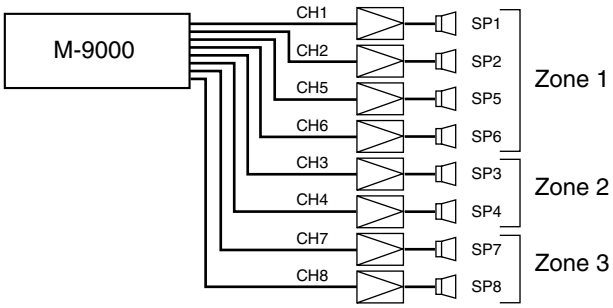
(Scene 01's zone division on Date A)

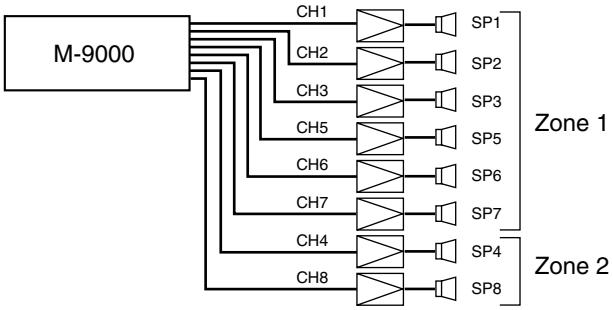


(Scene 02's zone division on Date B)



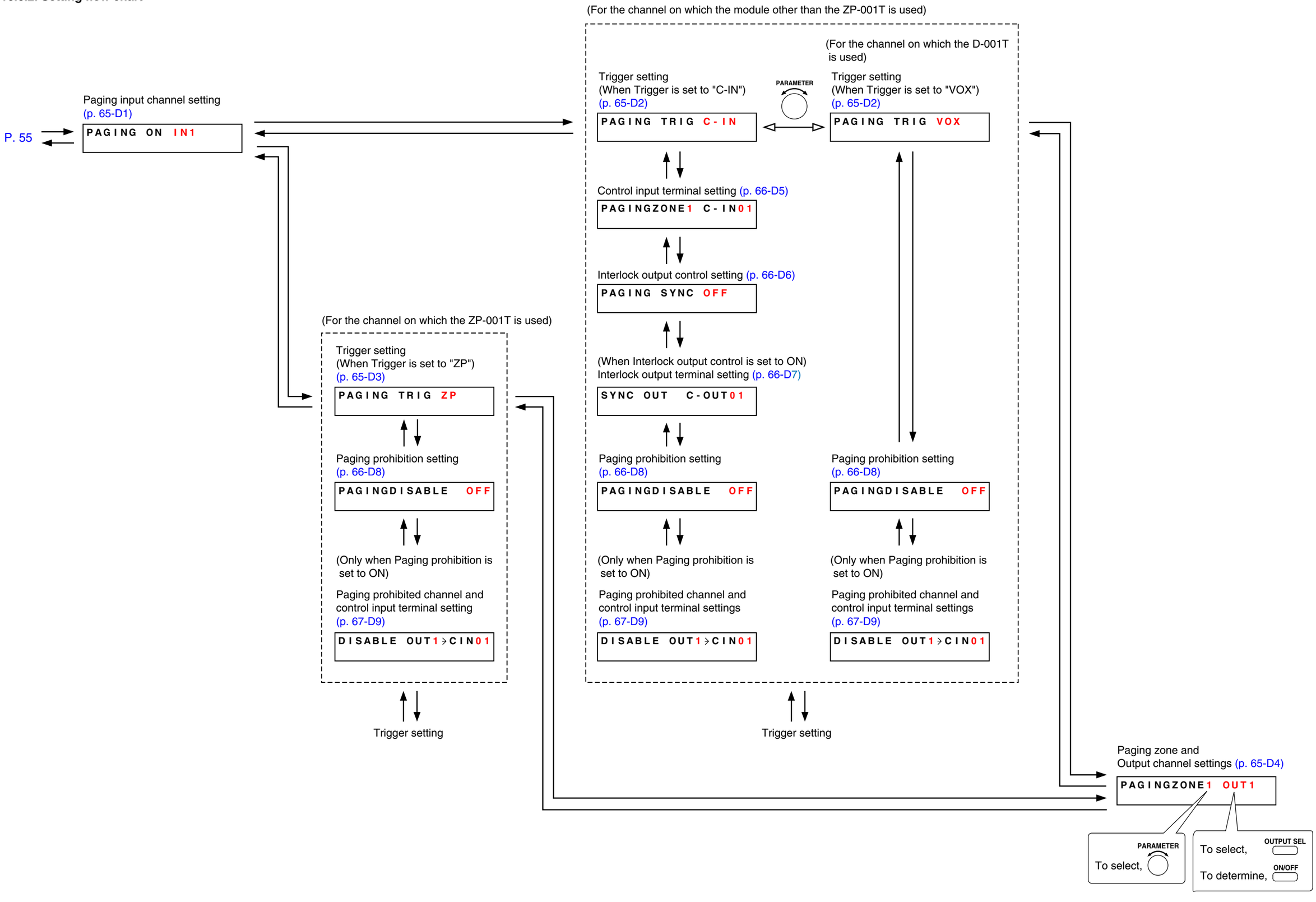
[System block diagram showing output channel-to-zone relationship]





○ Fixed speaker
● Speaker corresponding to the paging prohibited channel
- - - Partition
▭ Paging disabled zone

10.6.2. Setting flow chart



10.6.3. Paging setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

(D1) Paging input channel setting

```
PAGING ON IN1
```

Set the input channel to use the paging function.

Setting Range	IN1 – IN8 (default: IN1)

(D2) Trigger setting
(for the channel on which the module other than the ZP-001T is used)

```
PAGING TRIG C-IN
```

(D3) Trigger setting
(for the channel on which the ZP-001T is used)

```
PAGING TRIG ZP
```

Set the trigger to initiate paging. Type of trigger differs depending on the module that uses the channel.

Setting Range	Modules except the ZP-001T and D-001T: C-IN (default) D-001T: C-IN (default), VOX ZP-001T: ZP (default)

- VOX: Voice Operated Exchange
  Enables paging if the audio input signal exceeds a preset level. (When the D-001T is used)
  When Trigger is set to VOX, be sure to also set the Gate function for the paging input channel to ON.
- C-IN: Enables paging while the control input terminal is closed.
- ZP: Enables paging using the ZP-001T. (When the ZP-001T is used)

(D4) Paging zone and Output channel settings

```
PAGINGZONE1 OUT1
```

Paging zone Output channel

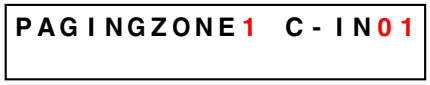
Set the paging zone and output channel.

- With Trigger = VOX, only one zone can be set.
- With Trigger = C-IN, up to 4 zones can be set.
- With Trigger = ZP, the above screen is not displayed. Paging calls are output at the ZP-001T's output channels selected by telephone dial operation.

Select the paging zone with the Parameter setting knob.
Then, select the output channel with the output channel selection key and set to ON (on-screen channel number indicator lights) with the output channel ON/OFF key. By repeating this procedure, 2 or more channels can be assigned to the paging zone.
Use the Right or Left shift key to move between the on-screen setting items.

Setting Range	Paging Zone	1 – 4 (default: 1)
	Output Channel	OUT1 – 2, Max. 8 when T-001Ts are used (default: OUT1)

(D5) Control input terminal setting (when Trigger is set to "C-IN")



Determine which control input terminal enables paging to the designated paging zone.
Assigning a function to this terminal overwrites the previously set function on it if there is.
Use the Right or Left shift key to move between the on-screen setting items.

Setting Range	Paging Zone	1 – 4 (default: 1)
	Control Input Terminal	C-IN01 – 04, C-IN01 – 12 when C-001T is used (default: C-IN01)

(D6) Interlock output control setting (when Trigger is set to "C-IN")

Set whether or not to close the control output terminal in synchronization with the paging initiation.

Setting Range	ON, OFF (default)

(When Trigger is set to "C-IN" and interlock output control to ON)
(D7) Interlock output terminal setting

Set the control output terminal that is closed in synchronization with the paging initiation.
Assigning a function to this terminal overwrites the previously set functions on it if there is.

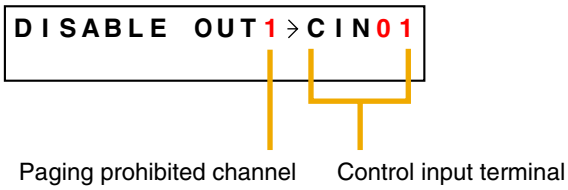
Setting Range	C-OUT01 – 04, C-OUT01 – 12 when C-001T is used (default: C-OUT01)

(D8) Paging prohibition setting (when Trigger is set to "C-IN," "VOX," or "ZP")

To determine a paging prohibited channel, set to ON.
Setting to ON makes the subsequent settings for Paging prohibited channel and Control input terminal available.

Setting Range	ON, OFF (default)

(When Trigger is set to "C-IN," "VOX," or "ZP," and only when Paging prohibition is set to ON)
(D9) Paging prohibited channel and control input terminal settings

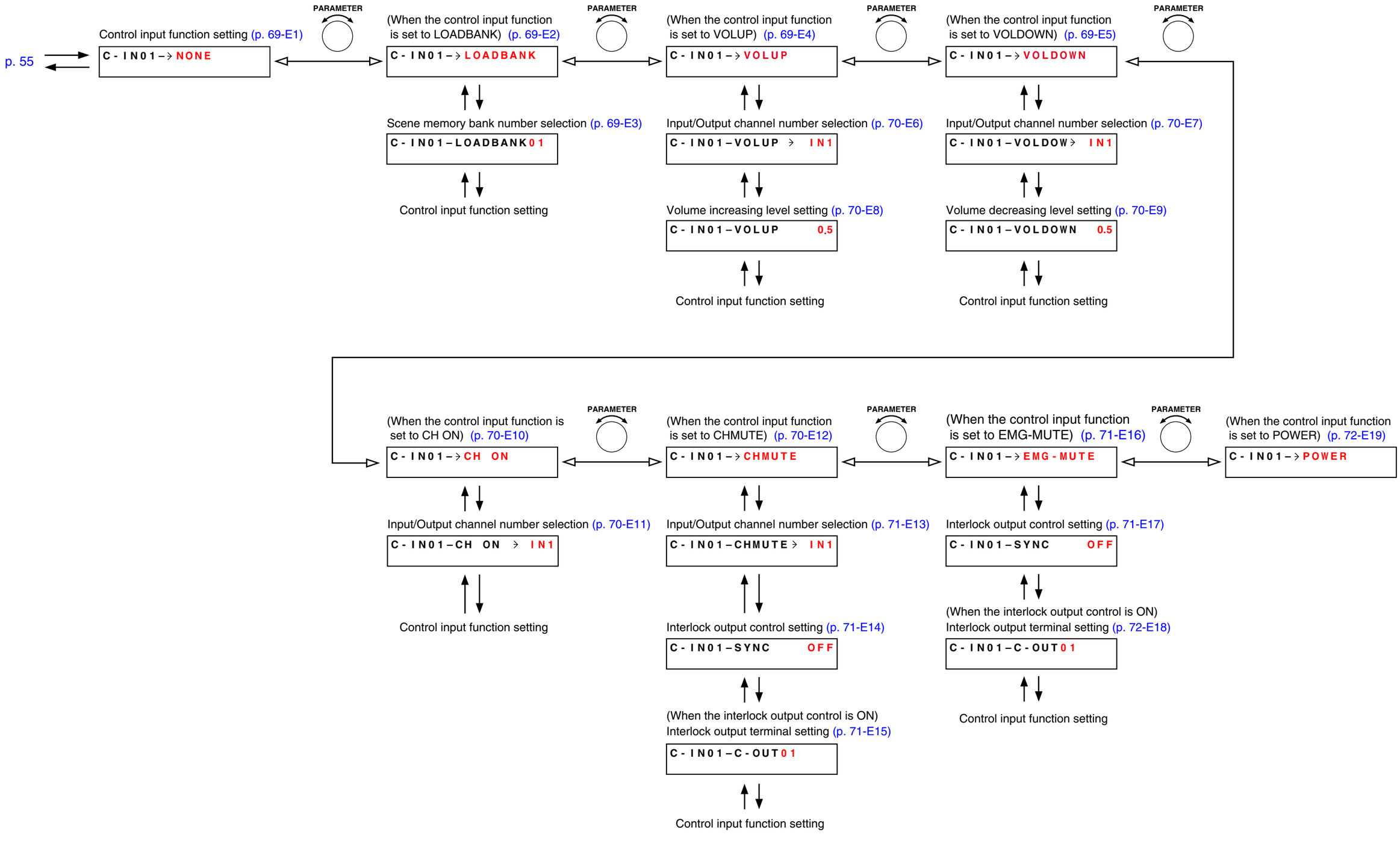


Set the paging prohibited output channel, and the control input terminal to enable the paging prohibition function.
With Trigger = C-IN or VOX, while the designated control input terminal is closed, paging calls are disabled to all of the paging zones to which the set output channel is assigned.
With Trigger = ZP, paging calls are not output only at the designated output channel.
Assigning a function to this terminal overwrites the previously set function on it if there is.
Use the Right or Left shift key to move between the on-screen setting items.

Setting Range	Prohibited Channel	OUT1 – 2, Max. 8 when T-001Ts are used (default: OUT1)
	Control Input Terminal	CIN01 – 04, CIN01 – 12 when C-001T is used (default: CIN01)

10.7. Control Input Function Setting

10.7.1. Setting flow chart


p. 55
Control input function setting (p. 69-E1)
C - I N 0 1 – NONE
PARAMETER
(When the control input function is set to LOADBANK) (p. 69-E2)
C - I N 0 1 – LOADBANK
Scene memory bank number selection (p. 69-E3)
C - I N 0 1 – LOADBANK 0 1
Control input function setting
(When the control input function is set to VOLUP) (p. 69-E4)
C - I N 0 1 – VOLUP
Input/Output channel number selection (p. 70-E6)
C - I N 0 1 – VOLUP IN1
Volume increasing level setting (p. 70-E8)
C - I N 0 1 – VOLUP 0.5
Control input function setting
(When the control input function is set to VOLDOWN) (p. 69-E5)
C - I N 0 1 – VOLDOWN
Input/Output channel number selection (p. 70-E7)
C - I N 0 1 – VOLDOW IN1
Volume decreasing level setting (p. 70-E9)
C - I N 0 1 – VOLDOWN 0.5
Control input function setting
(When the control input function is set to CH ON) (p. 70-E10)
C - I N 0 1 – CH ON
Input/Output channel number selection (p. 70-E11)
C - I N 0 1 – CH ON IN1
Control input function setting
(When the control input function is set to CHMUTE) (p. 70-E12)
C - I N 0 1 – CHMUTE
Input/Output channel number selection (p. 71-E13)
C - I N 0 1 – CHMUTE IN1
Interlock output control setting (p. 71-E14)
C - I N 0 1 – SYNC OFF
(When the interlock output control is ON)
Interlock output terminal setting (p. 71-E15)
C - I N 0 1 – C - OUT 0 1
Control input function setting
(When the control input function is set to EMG-MUTE) (p. 71-E16)
C - I N 0 1 – EMG - MUTE
Interlock output control setting (p. 71-E17)
C - I N 0 1 – SYNC OFF
(When the interlock output control is ON)
Interlock output terminal setting (p. 72-E18)
C - I N 0 1 – C - OUT 0 1
Control input function setting
(When the control input function is set to POWER) (p. 72-E19)
C - I N 0 1 – POWER
PARAMETER

10.7.2. Control input function setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

(E1) Control input function setting

Setting Range	C-IN01 to 12:	NONE (default), LOADBANK (Scene memory recall), VOLUP (volume up), VOLDOWN (volume down), CH ON (channel ON), CH MUTE (channel mute), EMG-MUTE (Cut-off by Emergency control), POWER (Power ON/OFF remote control)
	ZM-IN01 to 12:	NONE (default), LOADBANK, VOLUP, VOLDOWN

Sets the functions to be assigned to the control input terminals or control buttons of the ZM-9001 or ZM-9002.

[When the function is set to LOADBANK]

(E2)
(When the control input function is set to LOADBANK)

Closing the control input terminal recalls the settings saved in a Scene memory bank number.
Assigning a function to the control input terminal or ZM-9001/9002's control button overwrites the previously set function on it if there is.

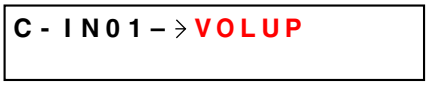
(E3) Scene memory bank number selection

Select the bank number to recall.

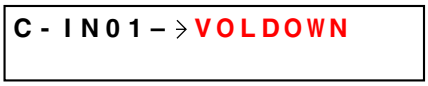
Setting Range	01 – 32 (default: 01)

[When the function is set to VOLUP or VOLDOWN]

(E4)
(When the control input function is set to VOLUP)



(E5)
(When the control input function is set to VOLDOWN)



Assign the volume-up or volume-down function to the control input.
Closing the control input terminal increases or decreases the volume of the set input or output channel.
Assigning a function to the control input terminal or ZM-9001/9002's control button overwrites the previously set function on it if there is.

(E6)
Input/Output channel number selection (VOLUP)

(E7)
Input/Output channel number selection (VOLDOWN)

Using the Input channel or Output channel selection key, select the channel number for which you want to change the volume.
One control input can change one input or output channel volume.
You can change the sound volume for a channel even with the channel off, but not adjust it while monitoring the sound.

Setting Range	IN1 – 8, OUT1 – 2, Max. OUT8 when T-001Ts are used (default: IN1)

(E8) Volume increasing level setting

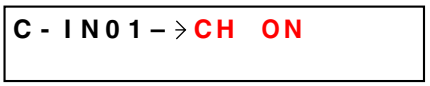
(E9) Volume decreasing level setting

Set the volume level (dB) to increase or decrease.

Setting Range	0.5 – 10.0 dB (default: 0.5)

[When the function is set to CH ON]

(E10)
(When the control input function is set to CH ON)



Assign the function to turn on the designated input or output channel to the control input terminal.
Closing the set control input terminal turns on the designated input or output channel.
Assigning a function to this terminal overwrites the previously set function on it if there is.

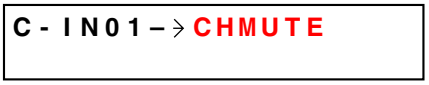
(E11) Input/Output channel number selection

Select with the input or output channel selection key the input or output channel to turn ON.
One control input can turn on one input or output channel.

Setting Range	IN1 – 8, OUT1 – 2, Max. OUT8 when T-001Ts are used (default: IN1)

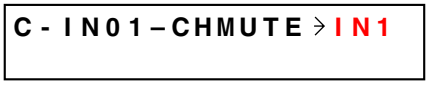
[When the function is set to CHMUTE]

(E12)
(When the control input function is set to CHMUTE)



Assign the function that mutes the input or output channel to the control input.
Closing the control input terminal mutes the set channel.
Assigning a function to this terminal overwrites the previously set function on it if there is.

(E13) Input/Output channel number selection



Using the Input channel or Output channel selection key, select the channel number to be muted.
One control input can mute one input or output channel.

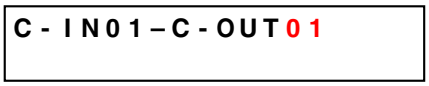
Setting Range	IN1 – 8, OUT1 – 2, Max. OUT8 when T-001Ts are used (default: IN1)

(E14) Interlock output control setting

Perform ON/OFF setting for the function that closes the control output terminal in synchronization with the control input terminal closure of the set number.

Setting Range	ON, OFF (default)

(When the interlock output control is set to ON)
(E15) Interlock output terminal setting

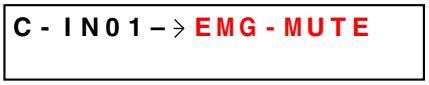


This screen is displayed only when the interlock output control is set to ON.
Set the control output terminal which is closed in synchronization with the control input of the set number.
Assigning a function to this terminal overwrites the previously set function on it if there is.

Setting Range	C-OUT01 – 04, C-OUT01 – 12 when C-001T is used (default: C-OUT01) **Note:** When the interlock output control ON/OFF setting is ON.

[When the function is set to EMG-MUTE]

(E16)
(When the control input function is set to EMG-MUTE)



Assign the function that simultaneously mutes all output channels to the control input. Closing the control input terminal mutes all output channels.
This function is used to mute the output provided from the unit during emergency broadcast operation.
Assigning a function to this terminal overwrites the previously set function on it if there is.

(E17) Interlock output control setting

Perform ON/OFF setting for the function that closes the control output terminal in synchronization with the control input terminal closure of the set number.

Setting Range	ON, OFF (default)

(When the interlock output control is set to ON)
(E18) Interlock output terminal setting

C - I N 0 1 – C - O U T 0 1

This screen is displayed only when the interlock output control setting is set to ON.
Set the control output terminal which is closed in synchronization with the control input of the set number.
Assigning a function to this terminal overwrites the previously set function on it if there is.

Setting Range	C-OUT01 – 04, C-OUT01 – 12 when C-001T is used (default: C-OUT01) **Note:** When the interlock output control ON/OFF setting is ON.

[When the function is set to POWER]

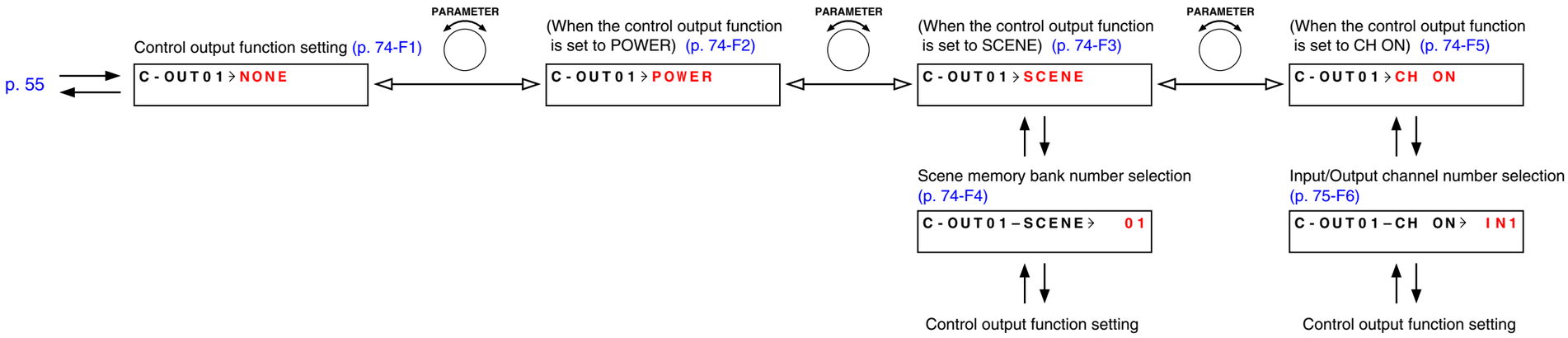
(E19)
(When the control input function is set to POWER)

C - I N 0 1 – > P O W E R

Assign the power ON or OFF function to the control input terminal.
Closing the set control input turns the power ON, and then opening it turns the power OFF.
Assigning a function to this terminal overwrites the previously set function on it if there is.

10.8. Control Output Function Setting

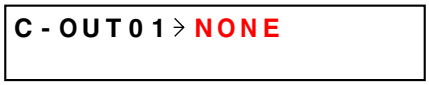
10.8.1. Setting flow chart


p. 55
Control output function setting (p. 74-F1)
C-OUT01>NONE
PARAMETER
(When the control output function is set to POWER) (p. 74-F2)
C-OUT01>POWER
PARAMETER
(When the control output function is set to SCENE) (p. 74-F3)
C-OUT01>SCENE
PARAMETER
(When the control output function is set to CH ON) (p. 74-F5)
C-OUT01>CH ON
Scene memory bank number selection (p. 74-F4)
C-OUT01–SCENE> 01
Control output function setting
Input/Output channel number selection (p. 75-F6)
C-OUT01–CH ON> IN1
Control output function setting

10.8.2. Control output function setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

(F1) Control output function setting

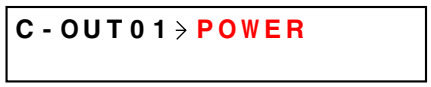


Setting Range	NONE (default), POWER (Power ON/OFF remote control), SCENE (Scene memory recall), CH ON (channel ON)

Select the function assigned to the control output terminal.

[When the function is set to POWER]

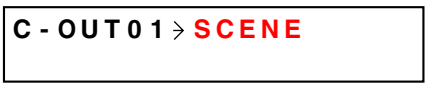
(F2)
(When the control output function is set to POWER)



Provides a Level output when the power is turned on.
Assigning a function to this terminal overwrites the previously set function on it if there is.

[When the function is set to SCENE]

(F3)
(When the control output function is set to SCENE)



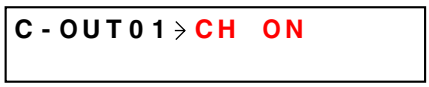
Provides a Level output when a Scene memory is recalled.
Assigning a function to this terminal overwrites the previously set function on it if there is.

(F4) Scene memory bank number selection

Select the Scene memory bank number that causes the selected control output terminal to provide a Level output when the Scene memory is recalled.
Assigning a function to this terminal overwrites the previously set function on it if there is.

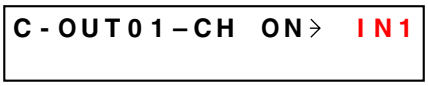
[When the function is set to CH ON]

(F5)
(When the control output function is set to CH ON)



Provides a Level output when the input or output channel becomes on.
Assigning a function to this terminal overwrites the previously set function on it if there is.

(F6) Input/Output channel number selection



Select the input or output channel number that causes the selected control output terminal to provide a Level output when the channel becomes on.

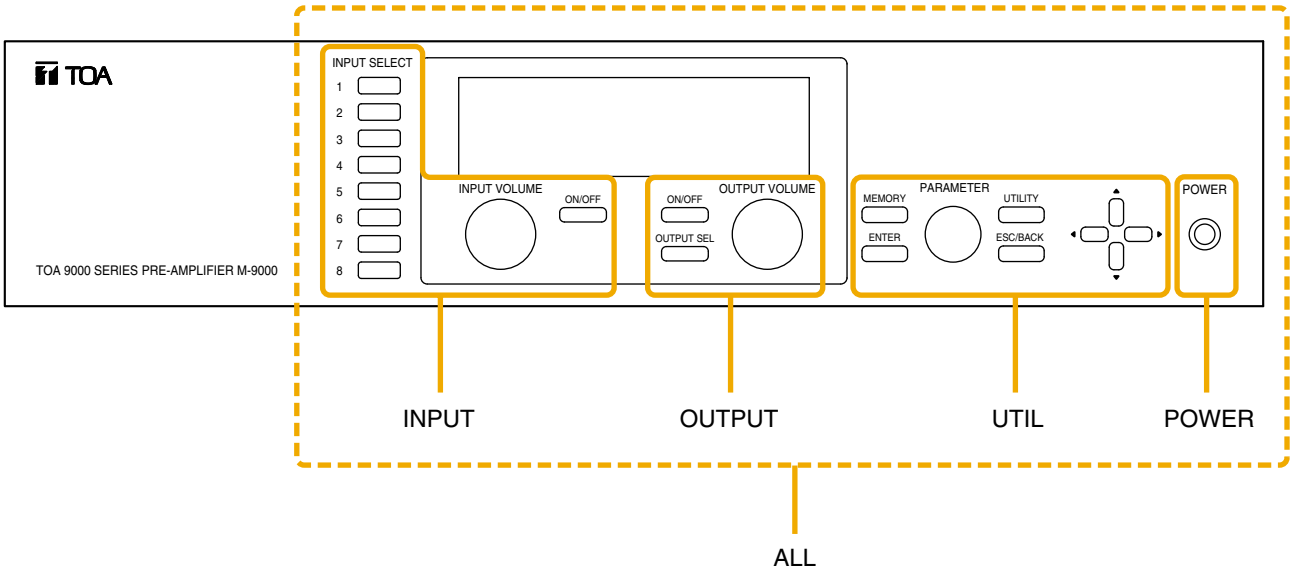
Setting Range	IN1 – 8, OUT1 – 2, Max. OUT8 when T-001Ts are used (default: IN1)

10.9. Key Lock Function Setting

The key lock function prevents equipment malfunctions by disabling operation of each key.

10.9.1. Keys that can be locked

This figure represents the M-9000.



ALL: Locks all keys simultaneously.

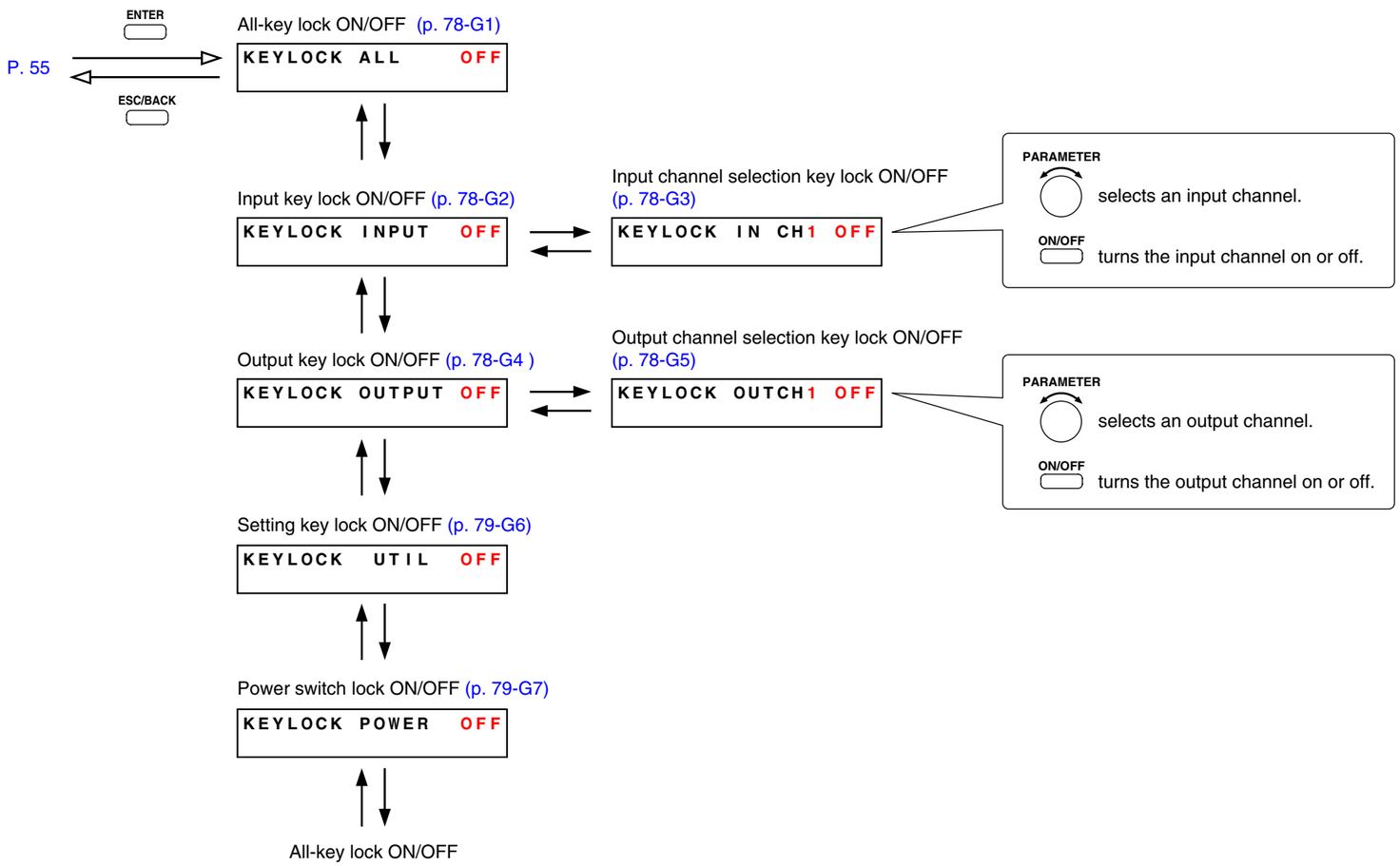
INPUT: Locks the Input channel selection keys, Input volume control, and Input channel ON/OFF key. It is also possible to individually set whether or not to lock for each channel.

OUTPUT: Locks the Output channel selection key, Output volume control, and Output channel ON/OFF key. It is also possible to individually set whether or not to lock for each channel.

UTIL: Locks the Utility menu key, Memory key, Enter key, Escape/Back key, and Parameter setting knob.

POWER: Locks the Power switch.

10.9.2. Setting flow chart



10.9.3. Key lock function setting items

Set the keys to be locked on the key lock function setting screen. The KEYLOCK indication lights after setting completion. Since a password is requested if the locked key is pressed, enter the password.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.

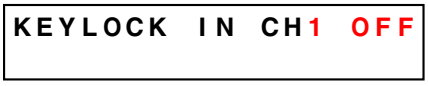
(G1) All-key lock ON/OFF

Selecting ON locks all keys located on the front panel.
If ON/OFF settings differ from key to key, the [- - -] indication is displayed when this screen appears.

(G2) Input key lock ON/OFF

Locks all Input channel selection keys, Input channel ON/OFF key, and Input volume control.
If ON/OFF settings differ from channel to channel, the [- - -] indication is displayed when this screen appears.

(G3) Input channel selection key lock ON/OFF



Locks the Input channel selection key, Input channel ON/OFF key, and Input volume control for each input channel.
Select with the Parameter setting knob the input channel to be locked, and set the key lock function to ON with the Input channel ON/OFF key.

(G4) Output key lock ON/OFF

Locks all Output channel selection keys, Output channel ON/OFF key, and Output volume control.
If ON/OFF settings differ from channel to channel, the [- - -] indication is displayed when this screen appears.

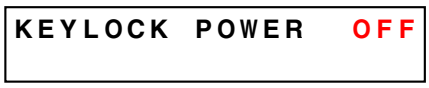
(G5) Output channel selection key lock ON/OFF

Locks the Output channel selection key, Output channel ON/OFF key, and Output volume control for each Output channel.
Select with the Parameter setting knob the Output channel to be locked, and set the key lock function to ON with the Output channel ON/OFF key.
The Output channel selection key selects an output channel one by one only in numerical order starting from Channel 1. So, when the output channel selection key is locked at an output channel, the subsequent output channels cannot be used unless the locked key is unlocked at the channel by entering a password.

(G6) Setting key lock ON/OFF

Selecting ON locks Utility key, Memory key, Enter key, Escape/Back key, and Parameter setting knob.

(G7) Power switch lock ON/OFF



Locks the Power switch.
Setting this function disables the power switch to be turned off when the unit's power is on. (Power can be turned on whenever the unit is off irrespective of the power switch lock ON/OFF status.)
To power off the unit, perform the remote control or turn the power switch off in the normal operation mode after setting the power switch lock function to OFF here and exiting the function setting mode.

10.9.4. Password setting

When using a password, set the password before performing lock setting for each key.

Step 1. Press the Utility key.
The Utility setting screen is displayed.

Step 2. Press the Down shift key until the keylock screen is displayed.

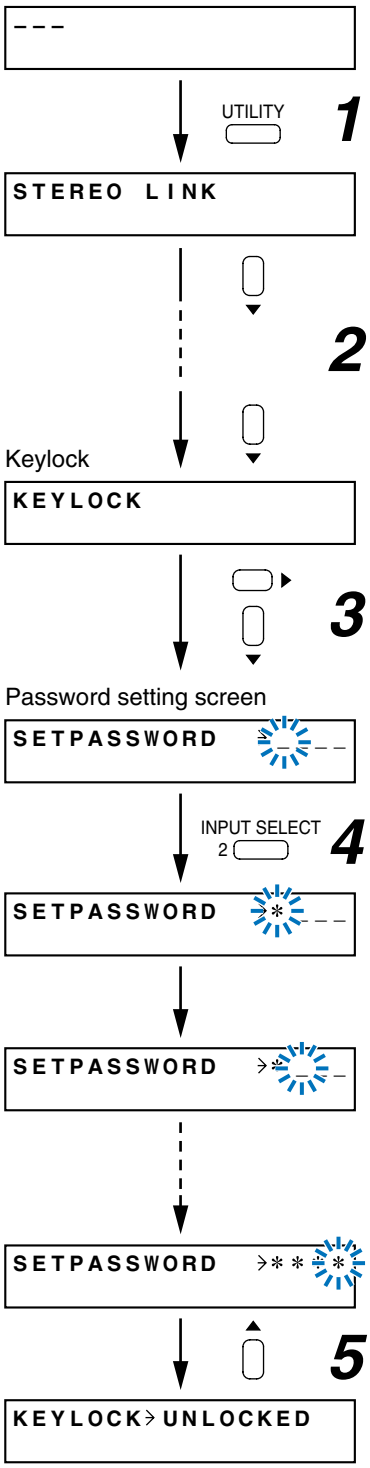
Note
No password is factory-preset.
(The [_ _ _ _] indication is displayed.)

Step 3. Press the Right shift key, and then Down shift key.
The password entry screen is displayed.

Step 4. Enter a password using the Input channel selection keys (1 – 8).
The position on the extreme left flashes first for character entry.
Entering a character changes the [_] indication into [✳].
Use up to 4 characters to set the password.

Step 5. Press the Up shift key after setting completion.
The display returns to the key lock status screen.

Step 6. Perform key lock setting.
Advance to Step 4 on the next page.



10.9.5. Key lock setting operation

Step 1. Press the Utility key.
The Utility setting screen is displayed.

Step 2. Press the Down shift key until the keylock screen is displayed.

Step 3. Press the Right shift key.
Lock status is displayed.

Step 4. Press the Enter key.
The all-key lock ON/OFF setting screen is displayed.

Step 5. Set keys to be locked.

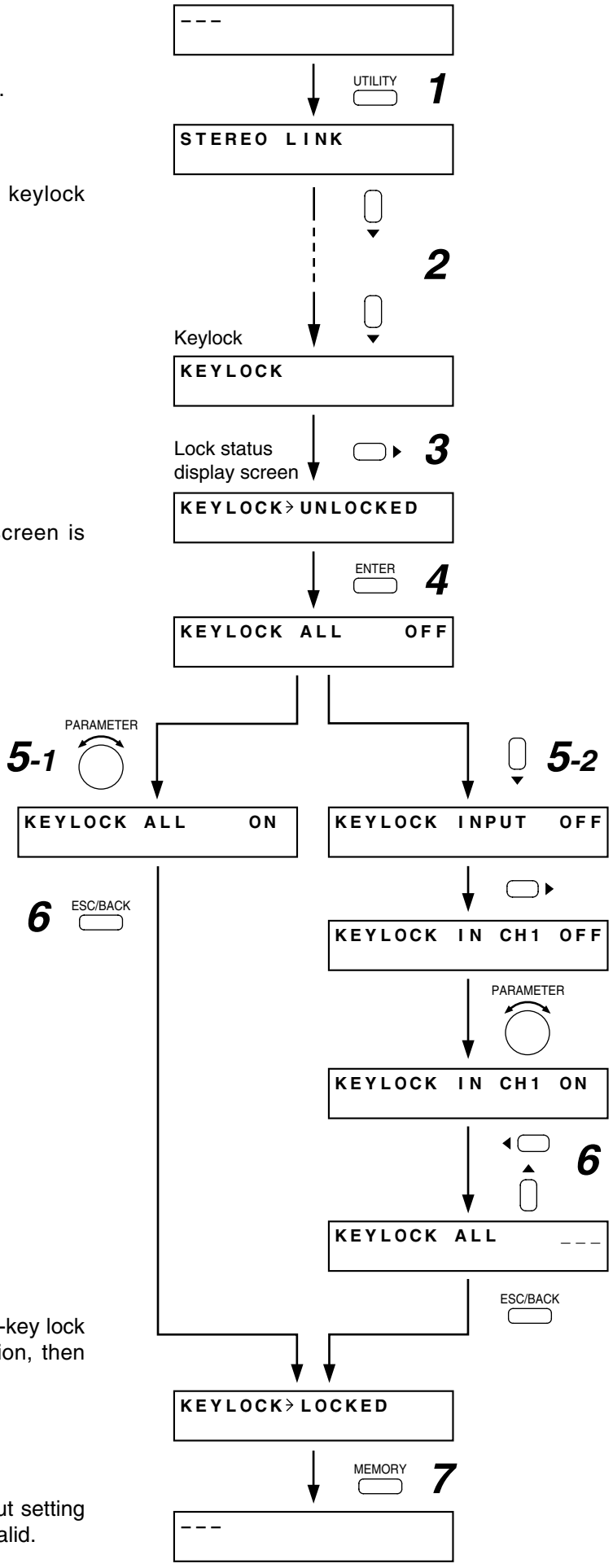
5-1. All-key lock setting
Set "KEYLOCK ALL" function to ON with the Parameter setting knob.

5-2. Selected key(s) lock setting
Press the Shift key to display individual setting screen for each key, and perform the ON/OFF setting with the Parameter setting knob.
You can set each input or output channel key to ON or OFF by selecting it on the screen.

Note
The setting flow on the right is an example for locking the input channel 1 key.

Step 6. Press the shift key to return to the all-key lock setting screen after setting completion, then press the Escape/Back key.

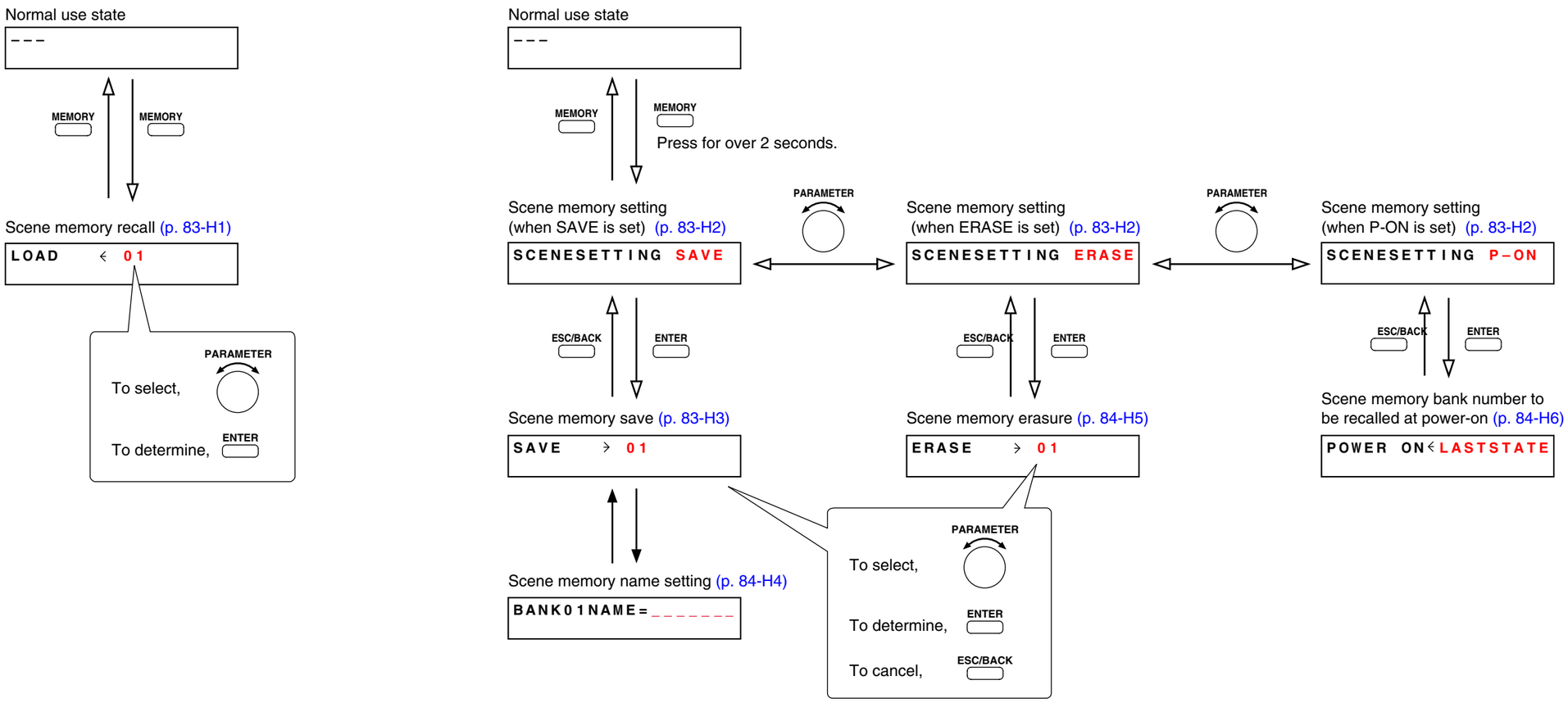
Step 7. Press the Memory key.
The display returns to the input/output setting screen, making the key lock setting valid.



10.10. Memory Setting

10.10.1. Setting flow chart

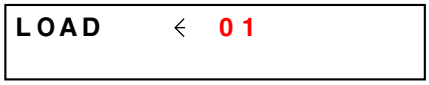
The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
The indications of the [↑], [↑], [→], and [→] arrows represent that the screen is switched with the Screen shift key.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.



10.10.2. Memory setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

(H1) Scene memory recall



Designate the Scene memory bank number to recall.

Setting Range	01 – 32 (default: 01)

Pressing the Enter key recalls the designated Scene memory.
After recall completion, the screen displays the Scene memory bank number and the set memory name.

Pressing the Memory key for over 2 seconds at the input or output setting screen displays the Scene memory setting screen.
To revert the display back to the input or output setting screen, press the Memory key again.

(H2) Scene memory setting

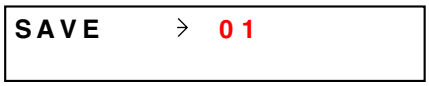
Set the Scene memory function.

Setting Range	SAVE (default), ERASE, P-ON

- SAVE: Saves the current settings as a Scene memory.
- ERASE: Erases the Scene memory.
- P-ON: Sets the Scene memory bank number to be recalled at power-on.

Select the function above and press the Enter key, and the corresponding screen is displayed.

(H3) Scene memory save (when SAVE is set)



Designate the memory bank number to save the current settings to.

Setting Range	01 – 32 (default: 01)

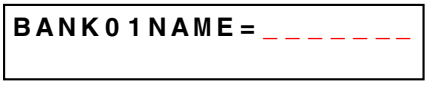
Pressing the Enter key saves the current settings to the designated memory bank number.
To cancel save execution, press the Escape/Back key.

Parameters that can be saved into the Scene memory bank are as follows:

Input channel parameter:	Channel gain, Channel ON/OFF, Output channel assignment, and built-in modules' inner parameters*
Output channel parameter:	Channel gain, Channel ON/OFF, Bass, Treble, Loudness compensation, EQ, HPF, LPF, Compressor, Delay, and built-in modules' inner parameters*
Paging zone:	Paging zones set in the paging setting flow

* Setting items dedicated to the D-001T, ZP-001T, T-001T or AN-001T

(H4) Scene memory name setting (when SAVE is set)

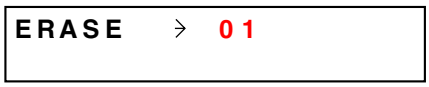


Give a name to the Scene memory.

Setting Range	7 characters (default: _ _ _ _ _ _ _)

The flashing portion is the cursor position for entering Scene memory name characters.
Select a character from the alphanumeric character list by rotating the Parameter setting knob, then move the cursor with the Right shift key.
Entering a new name overwrites the existing name, if there is.
To delete the character, select " _ " (underscore) with the Parameter setting knob. A space character cannot be entered.
Up to 7 characters can be used to set the name.

(H5) Scene memory erasure (when ERASE is set)



Erase the saved Scene memory.

Setting Range	01 – 32 (default: 01)

Pressing the Enter key erases the Scene memory in the designated memory bank number.
To cancel erasure execution, press the Escape/Back key.
After erasure completion, the unit setting is restored to the factory default setting.

(H6) Scene memory bank number to be recalled at power-on (when P-ON is set)

Set either the Scene memory bank number to be automatically recalled at power-on, or "LASTSTATE."

Setting Range	LASTSTATE (default), 01 – 32

When LASTSTATE is selected, the unit returns to the state just before power-off when turned on.
Even if the AC power supply is cut off during setting, the parameters that have been set so far are all saved. When the power returns, the unit is powered up to the state just before power-off.
When a Scene number is selected, if the AC power supply is cut off during setting, the parameters that have been set so far are all cancelled. When the power returns, the unit is powered up to the state that was saved into the set Scene memory bank number.

11. HOW TO STORE OR ERASE SCENE MEMORY

A "Scene" defines the unit of broadcast pattern in mixer mode.
Up to 32 patterns can be stored as Scene memory in the Scene memory bank, which can then be recalled.

11.1. Storing Scene Memory

Step 1. Hold down the Memory key for 2 seconds or more.
The Scene memory setting screen is displayed.

Step 2. Use the Parameter setting knob to display "SAVE" indication.

Step 3. Press the Enter key to display the Scene memory save screen.

Step 4. Select with the Parameter setting knob the Scene memory bank number (01 – 32) to be stored.

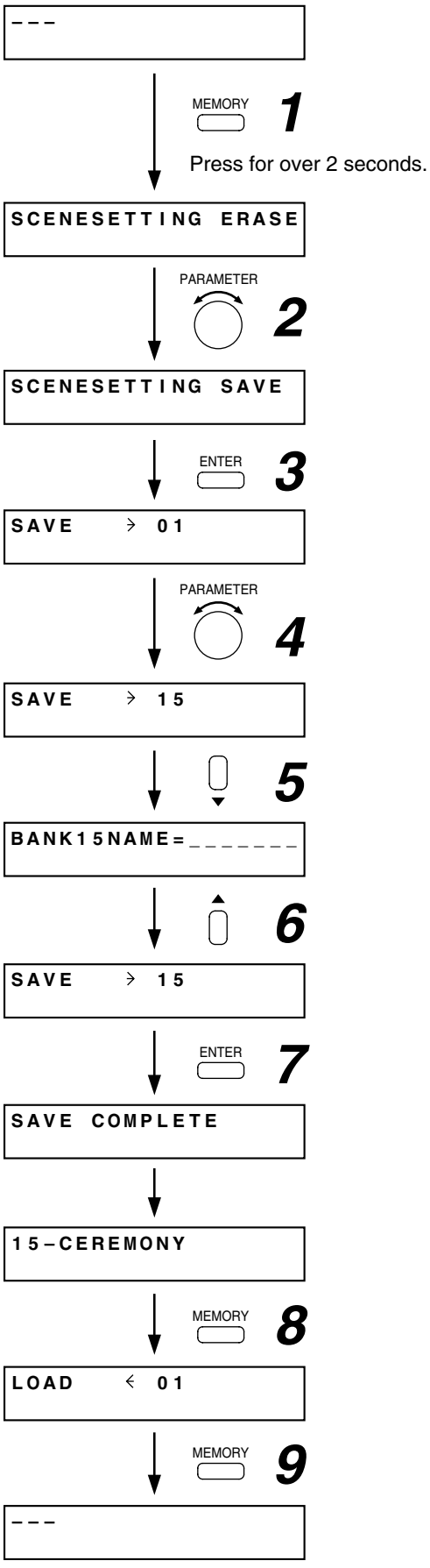
Step 5. Set the Scene memory name.
Press the Down shift key to display the Scene memory name setting screen.
Up to 7 characters can be used to set the name.
Advance to Step 7 when name setting is not required.

Step 6. Press the Up shift key.
The display returns to the Scene memory save screen.

Step 7. Press the Enter key to store the current settings to the designated Memory bank number.
The set name is displayed on the screen.

Step 8. Press the Memory key.
The display returns to the Scene memory recall screen.

Step 9. Press the Memory key.
The display returns to the Normal use state.



11.2. Erasing Scene Memory

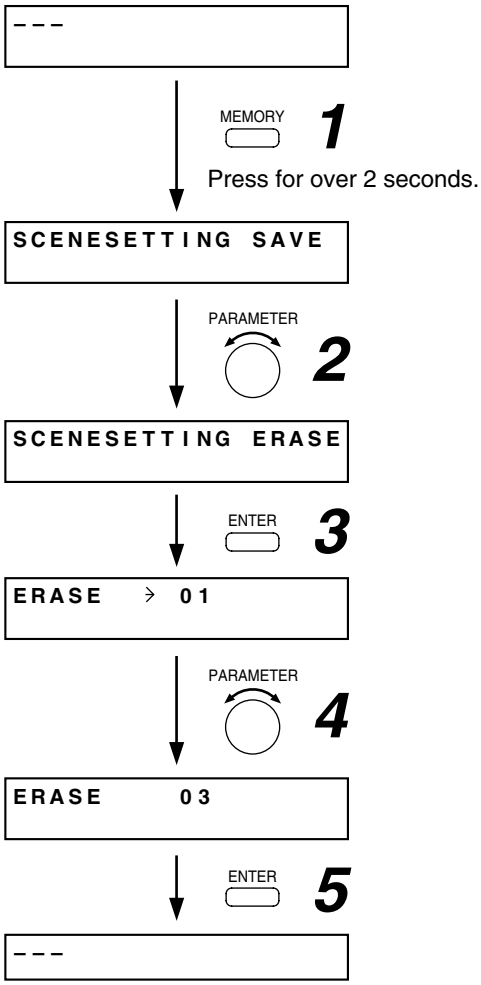
Step 1. Hold down the Memory key for 2 seconds or more.
The Scene memory setting screen is displayed.

Step 2. Use the Parameter setting knob to display "ERASE" indication.

Step 3. Press the Enter key to display the Scene memory erasure screen.

Step 4. Select with the Parameter setting knob the Scene memory bank number (01 – 32) to be erased.

Step 5. Press the Enter key to erase the setting data stored in the designated memory bank number.
After erasure completion, the unit returns to the normal use state.



11.3. Setting the Scene Memory to be Recalled at Power-On

Step 1. Hold down the Memory key for 2 seconds or more.
The Scene memory setting screen is displayed.

Step 2. Use the Parameter setting knob to display "P-ON" indication.

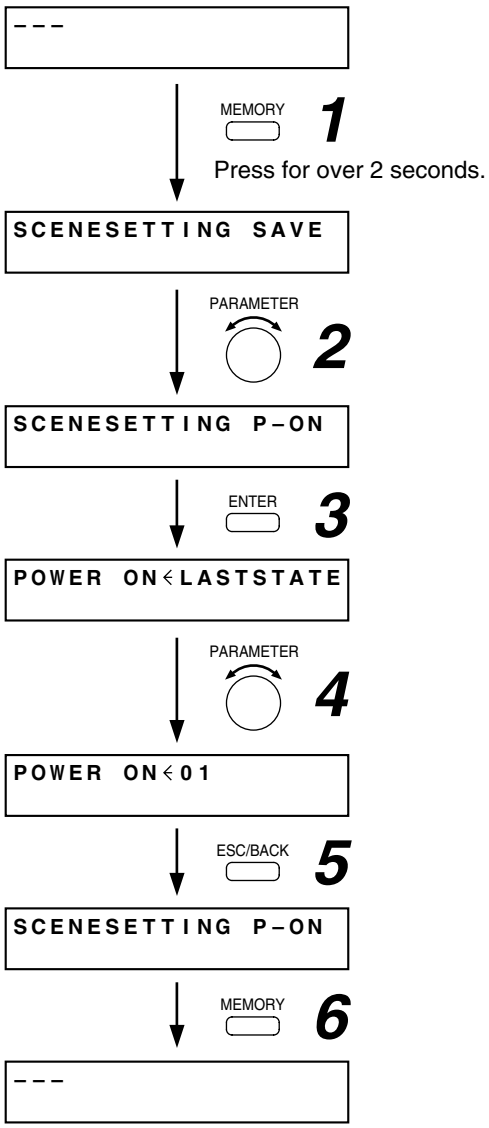
Step 3. Press the Enter key to display the setting screen for the Scene memory to be recalled at Power-On.

Step 4. Select with the Parameter setting knob the Scene memory bank number (01 – 32) or LAST STATE to be read at power-on.

Note
When the "LAST STATE" is selected, the unit is powered up to the state just before power-off when the power is switched on again.

Step 5. Press the Escape/Back key to perform setting that the designated Scene memory bank number is read at power-on.

Step 6. Press the Memory key.
The display returns to the normal use state.



12. RESTORING FACTORY DEFAULT SETTING

Follow the procedures below to return all settings to default values while using the unit in the matrix mode. Details of the default values are shown on the next page, "Default Setting Table."

Step 1. Press the Utility key to display the utility setting screen.

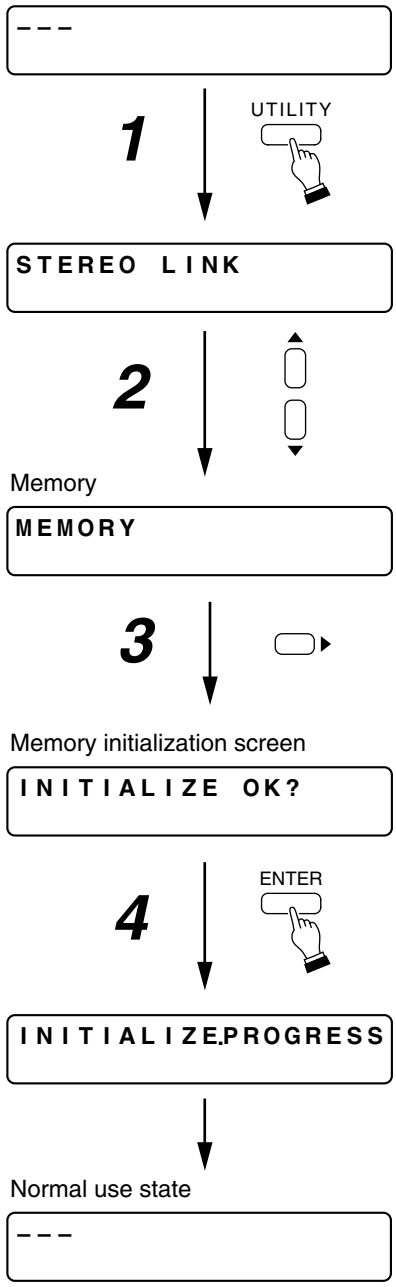
Step 2. Press the Up or Down shift key until the "MEMORY" indication is displayed.

Step 3. Press the Right shift key to display the memory initialization screen "INITIALIZE OK?" indication.

Step 4. When "INITIALIZE OK?" is displayed, press the Enter key.

To cancel initialization, press the Up or Down shift key to move to the next setting screen.

After initialization completion, the unit returns to the normal use state.



12.1. Default Setting Table

12.1.1. Input settings

Setting Item	Default
Input channel Selection	IN1
Channel Control	ON
Channel Gain	0.0 dB
Channel Name	(IN1 – 8)

[Settings when the D-001T is used]

Phantom Power	OFF
Input Sensitivity	–10 dB
NOM Attenuation Function	OFF
BASS/TREBLE	0 dB
Loudness Compensation	OFF
EQ	OFF
EQ Band Number	01 (When EQ = ON and EQ band number = 01)
Gain	0 dB (When EQ = ON and EQ band number = 01)
Q	1.5 (When EQ = ON and EQ band number = 01)
Center Frequency	31.5 Hz (When EQ = ON and EQ band number = 01)
HPF	OFF
LPF	OFF
Compressor	OFF
Gate ON/OFF	OFF
Gate Threshold Level	–30 dB (When the gate function is ON)

[Settings when the ZP-001T is used]

Pre-paging Tone	OFF
Operation Mode	PAGING PORT

[Settings when the AN-001T is used]

ANC Operation ON/OFF	BYPASS
Input Sensitivity	–10 dB
Phantom Power	OFF
ANC-Activated Output	OUT1
Monitor ON/OFF	OFF
Monitor Output Channel	OUT1 (When the monitor ON/OFF setting is ON)
Lowest Output Level	–6 dB
Highest Output Level	0 dB
Sampling Time	20 sec
Gain Ratio	3:3
Reference Level	0 dB

[Settings when the AN-001T is not used]

Ducker ON/OFF	OFF
Ducker Priority Level	D-001T: PRIORITY 1 (When the ducker function is ON) Modules except the D-001T: PRIORITY 2 (When the ducker function is ON)
Ducker Attenuation Level	OFF (When the ducker function is ON)
Assigned Output Level	0 dB (for all the assigned output channels)

12.1.2. Audio output settings

Setting Item	Default
Output Channel Selection	OUT1
Channel Control	ON
Channel Gain	–20.0 dB
Channel Name	(OUT 1 – 8)
BASS/TREBLE	0 dB
Loudness Compensation	OFF
Speaker Parameter Presetting	ALL FLAT
EQ	OFF
EQ Band Number	01 (When EQ = ON and EQ band number = 01)
Gain	0 dB (When EQ = ON and EQ band number = 01)
Q	1.5 (When EQ = ON and EQ band number = 01)
Center Frequency	31.5 Hz (When EQ = ON and EQ band number = 01)
HPF	OFF
LPF	OFF
Compressor	OFF
Delay ON/OFF	OFF
Delay Time	0 (When DELAY = ON)

12.1.3. Utility settings

Setting Item	Default
Stereo Link	No channel is stereo-linked.
Paging ON/OFF	OFF
NOM Attenuation	0
Control Input Terminal Number	01
Control Input Terminal Function Display	NONE
Control Input Terminal Status Display	_ _ _ _ _ _ _ _ _ _ _ _ (All terminals are open.)
Control Output Terminal Number	01
Control Output Terminal Function Display	NONE
Control Output Terminal Status Display	_ _ _ _ _ _ _ _ _ _ _ _ (All terminals are open.)
Remote Controller Type	OFF
Remote-Controlled Channel	REMOTE1 terminal for OUTPUT1 control, REMOTE2 terminal for OUTPUT2 control (when the remote controller type is set to VOLUME or ZM-9002)
ANC Monitor Switching ON/OFF	OFF
ANC Monitor Switching Control Input Terminal	CIN01
ANC Monitor Switching Interlock Output Control	OFF
ANC Monitor Switching Interlock Output Terminal	COUT01 (When the interlock output control is ON)
Lock Status	UNLOCKED
Password	_ _ _ _ (No password)
GATE Release Time	5
RS-232C Communication Speed	57.6 k
Slot Number	1
Module Classification	OTHERS

[Paging input settings]

Paging Input Channel	IN1
Trigger	Modules except the ZP-001T: C-IN ZP-001T: ZP
Paging Zone	1
Output Channel	OUT1

• Trigger: C-IN

Control Input Terminal	C-IN01
Interlock Output Control	OFF
Interlock Output Terminal	C-OUT01 (When Interlock output control is ON)
Paging Prohibition	OFF
Paging Prohibited Channel	OUT1 (When Paging prohibition is ON)
Paging Prohibited Control Input Terminal	CIN01 (When Paging prohibition is ON)

• Trigger: VOX

Paging Prohibition	OFF
Paging Prohibited Channel	OUT1 (When Paging prohibition is ON)
Paging Prohibited Control Input Terminal	CIN01 (When Paging prohibition is ON)

• Trigger: ZP

Paging Prohibition	OFF
Paging Prohibited Channel	OUT1 (When Paging prohibition is ON)
Paging Prohibited Control Input Terminal	CIN01 (When Paging prohibition is ON)

[Control input function setting]

Control Input Function	NONE

• Control input function: LOADBANK

Scene Memory Bank Number	01

• Control input function: VOLUP

Input/Output Channel Number	IN1
Volume Increasing Level	0.5 dB

• Control input function: VOLDOWN

Input/Output Channel Number	IN1
Volume Decreasing Level	0.5 dB

• Control input function: CH ON

Input/Output Channel Number	IN1

• Control input function: CH MUTE

Input/Output Channel Number	IN1
Interlock Output Control	OFF
Interlock Output Terminal	C-OUT01 (When Interlock output control is ON)

• Control input function: EMG-MUTE

Input/Output Channel Number	OFF
Interlock Output Control	C-OUT01 (When Interlock output control is ON)

[Control output function setting]

Control Output Function	NONE

• Control output function: SCENE

Scene Memory Bank Number	01

• Control output function: CH ON

Input/Output Channel Number	IN1

12.1.4. Memory settings

Setting Item	Default
Scene Memory Recall	01
Scene Memory Setting	SAVE

[Scene memory: SAVE]

Memory Bank Number	01
Scene Memory Name	_ _ _ _ _ _ _ (No name)

[Scene memory: ERASE]

Memory Bank Number	01

[Scene memory: P-ON]

Scene Memory Bank Number To Be Recalled at Power-On	LASTSTATE

13. MODULE INSTALLATION

Important Be sure to detach the power cord when inserting or removing any module.

13.1. Module Combination

The unit is designed to provide an up to 8-input/8-output configuration in combination with its optional modules.
Inputs are configured by only using the modules. (No input terminals are located on the rear panel.)
For outputs, 2 output channels are provided on the rear panel and can be expanded by adding modules.
There are 4 control inputs and 4 control outputs on the rear panel, which can be expanded to a maximum of 12 inputs and 12 outputs with the additional use of 1 module.
900 Series input modules can also be used together with 9000 Series modules.

9000 series modules		No. of inputs	Maximum mountable No.
Model No.	Module function		
D-001T	2-channel Mic/Line input	2	4
ZP-001T	Zone paging input	1	1
T-001T	2-channel output	—	3
C-001T	Remote control	—	1
AN-001T	2-channel ambient noise sensor input	2	2

900 series modules	1	8

13.2. Channel Numbers and Terminal Numbers

- Input channel numbers 1, 2, 3... begin with the input(s) of the module inserted into Slot No. 1.
- Output channels 1 and 2 correspond to the unit's rear panel-mounted preamplifier output terminals 1 and 2, respectively. When output modules are added, the output channel numbers are 3, 4, 5....beginning with the output of the module inserted into Slot 5.
- Control input and output terminal numbers correspond to control input and output terminals 1 – 4 on the unit's rear panel. When a C-001T module is added, the additional terminal numbers are from 5 to 12.

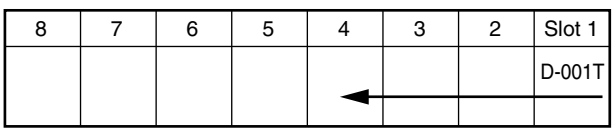
13.3. Module Installation

The unit's rear panel-mounted module slot numbers are 1 – 8 from right to left as viewed from the rear.
There are rules for module installation. Follow the procedures below to mount the modules.

Notes
- Avoid touching parts and terminals on the module's circuit board when inserting or removing the module.
- Mount the module in the right place and certainly secure it with screws.

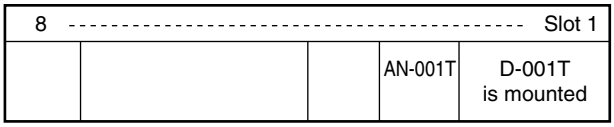
Step 1. Insert the D-001T module into the slots, starting in order from Slot 1 without leaving slots open in between.

Note
Only Slots 1 – 4 can be used for the D-001T module.



Step 2. Insert the AN-001T module into the slots in order without leaving slots open in between.

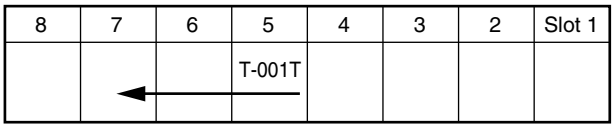
Note
Up to 8 audio inputs including AN-001T's inputs can be used per amplifier.



(Example when no D-001T is mounted)

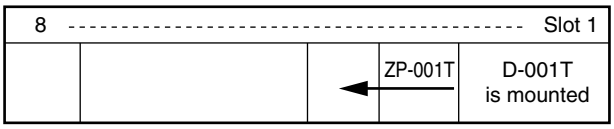
Step 3. Insert the T-001T module into the slots, starting in order from Slot 5 without leaving slots open in between.

Note
Only Slots 5 – 7 can be used for the T-001T module.



Step 4. Insert the ZP-001T module(s) into the slots in order without leaving slots open in between.

Note
Start the insertion from Slot No. 1 when neither D-001T nor AN-001T module is used.

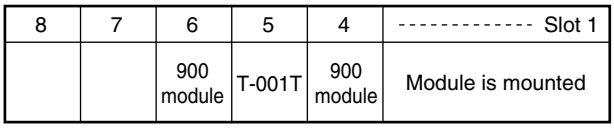


(Example when neither D-001T nor AN-001T is mounted)

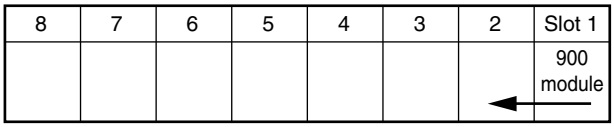
Step 5. Insert the 900 Series input modules.

Notes
- When Slot No. 1 is occupied with the D-001T or AN-001T, Slot No. 8 is not used for the 900 Series module. Likewise, when Slot No. 2 is occupied, Slot No. 7 is not used; when Slot No. 3 is occupied, Slot No. 6 is not used; and when Slot No. 4 is occupied, Slot No. 5 is not used.
- Insert the 900 Series input modules in order without leaving slots open in between.
- Use the open slots in increasing slot number order even if the T-001T module is mounted in an intermediate position.
- Insert modules into the slots, starting in order from Slot No. 1 when not mounting the D-001T, AN-001T, and ZP-001T.

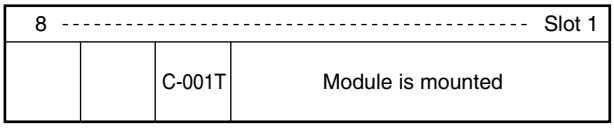
(Example when the T-001T is mounted in an intermediate position)



(Example when neither D-001T, AN-001T, nor ZP-001T is mounted)



Step 6. Insert the C-001T module in the open slot with the lowest slot number.



Step 7. Attach the blank panels supplied with the unit onto open slots.

Note
If modules are not correctly installed, an error indication is displayed on the VFD screen when the power is turned on. In such cases, check the above procedures again and reinsert the modules.

(Example for an error indication)

13.4. Module Installation Examples

[Example of audio 8 IN/8 OUT and control 12 IN/12 OUT configuration]

Slot No. 8	7	6	5	4	3	2	1
C-001T Control 8 inputs 8 outputs	T-001T Audio 2 outputs	T-001T Audio 2 outputs	T-001T Audio 2 outputs	D-001T Audio 2 inputs	D-001T Audio 2 inputs	D-001T Audio 2 inputs	D-001T Audio 2 inputs

[Example of audio 5 IN/4 OUT, control 4 IN/4 OUT, and ambient noise sensor 2 IN configuration]

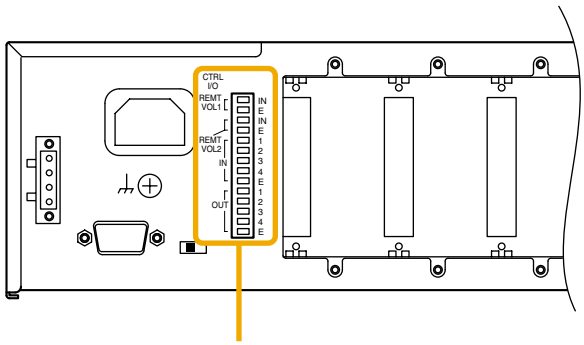
8	7	6	5	4	3	2	1
Open slot (Attach the blank panel)	Open slot (Attach the blank panel)	900 series module Audio 1 input	T-001T Audio 2 outputs	900 series module Audio 1 input	900 series module Audio 1 input	AN-001T Ambient noise sensor 2 inputs	D-001T Audio 2 inputs

[Example of audio 2 IN/4 OUT, control 4 IN/4 OUT, and ambient noise sensor 2 IN configuration]

8	7	6	5	4	3	2	1
Open slot (Attach the blank panel)	Open slot (Attach the blank panel)	Open slot (Attach the blank panel)	T-001T Audio 2 outputs	Open slot (Attach the blank panel)	900 series module Audio 1 input	ZP-001T Audio 1 input	AN-001T Ambient noise sensor 2 inputs

14. CONNECTIONS

14.1. Control I/O Terminal Connections



Control-I/O connection terminal

14.1.1. Remote volumes 1, 2

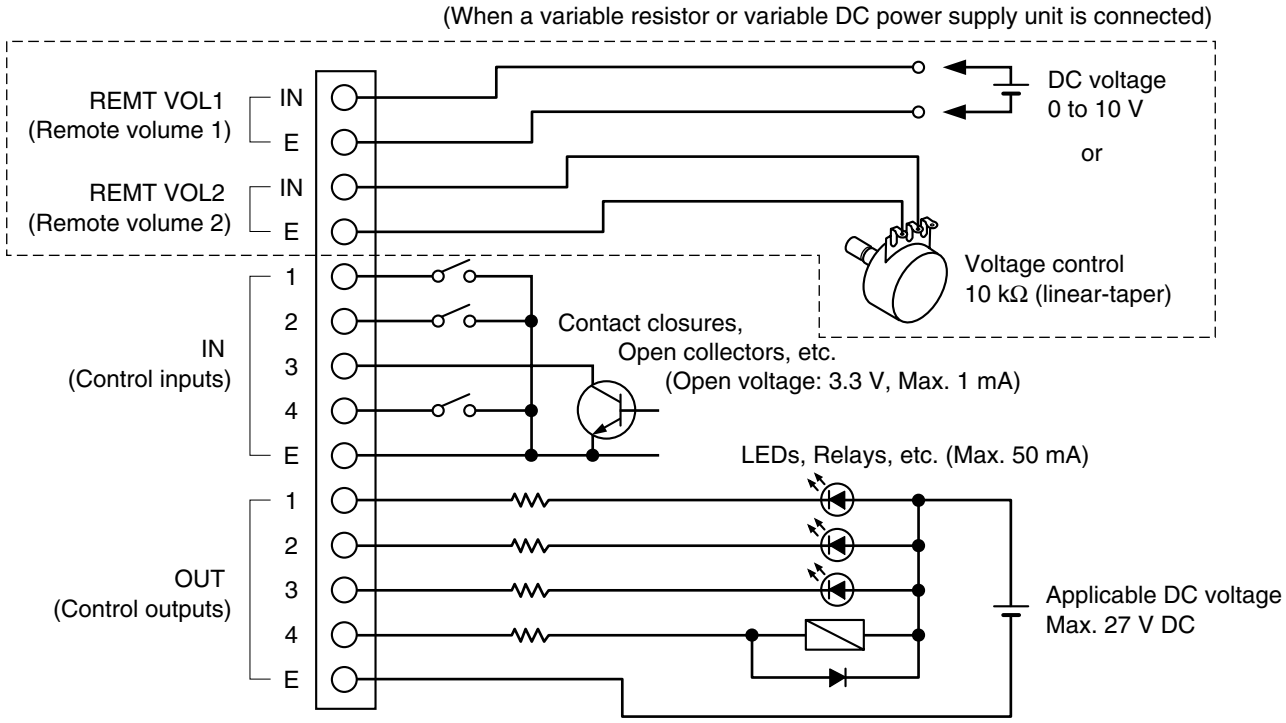
Volume of the input or output channels can be remotely adjusted by connecting a variable resistor or variable DC power supply unit. (The REMT VOL 1 terminal is factory-preset to output 1, and the REMT VOL 2 to output 2.)
Connect a 10 kΩ (linear taper) variable resistor or input the DC voltage of 0 to +10 V as shown on the next page.
The larger the variable resistor resistance, the larger the volume is, and the smaller its resistance, the smaller the volume is.
Connecting the ZM-9001 Zone Manager adds 6 control inputs and allows the equipped 6 control buttons to perform the functions assigned for input's or output's channel volume up/down, or Scene memory recall.
Connecting the ZM-9002 Zone Manager adds 1 volume control and 4 control inputs. Volume of the input or output channels can be remotely adjusted with the volume control, and the 4 control buttons can be assigned the same functions as those of the ZM-9001.

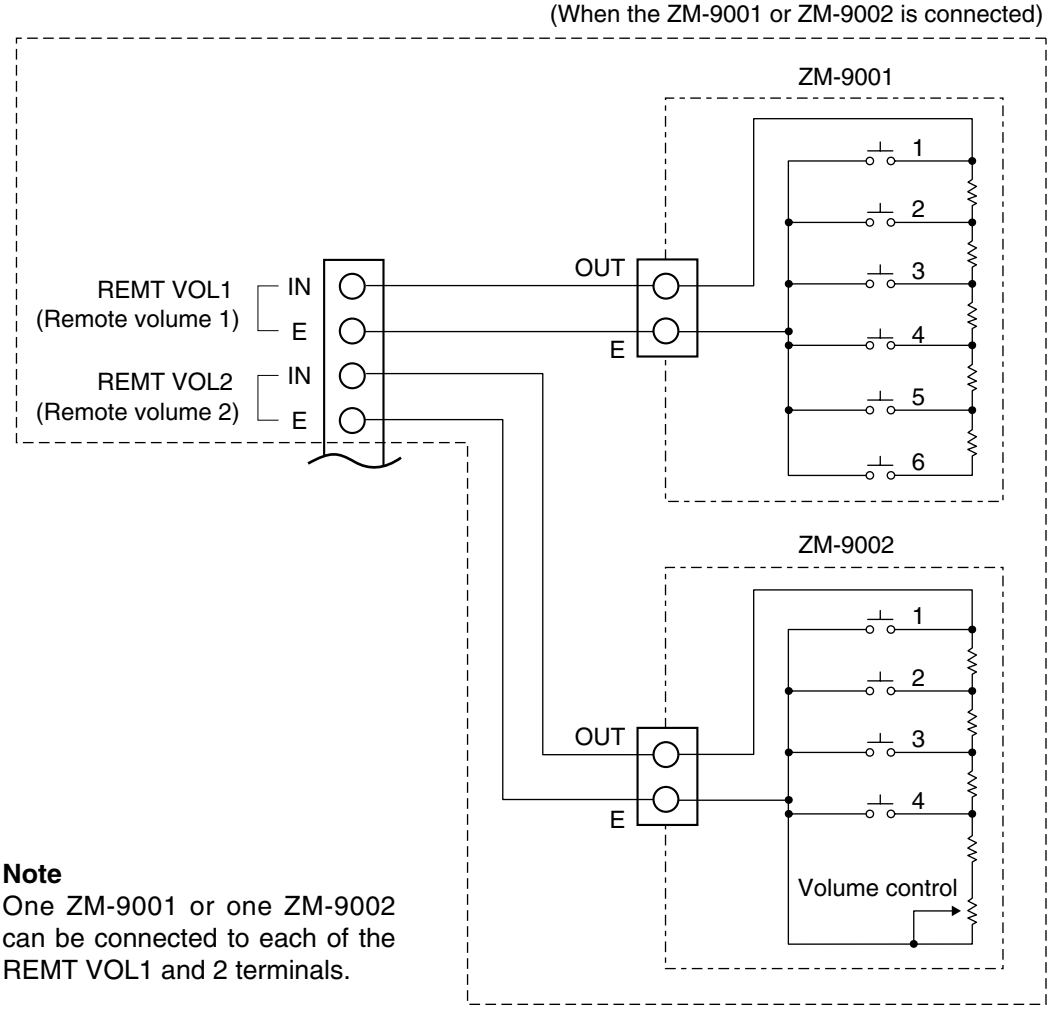
14.1.2. Control inputs 1 – 4

Connect switch contacts, etc. to these terminals.
Open voltage is 3.3 V, and the short-circuit current is 1 mA or less.

14.1.3. Control outputs 1 – 4

Use these terminals to activate LEDs, relays, and other external equipment.
Maximum operating current is 50 mA, and the maximum applicable voltage is +27 V.



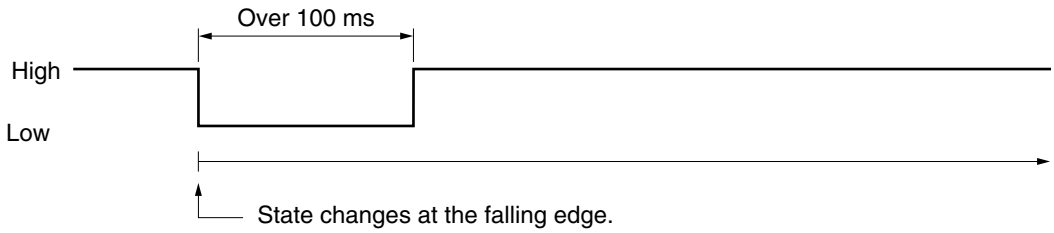


Note
One ZM-9001 or one ZM-9002 can be connected to each of the REMT VOL1 and 2 terminals.

14.1.4. Operation by control input

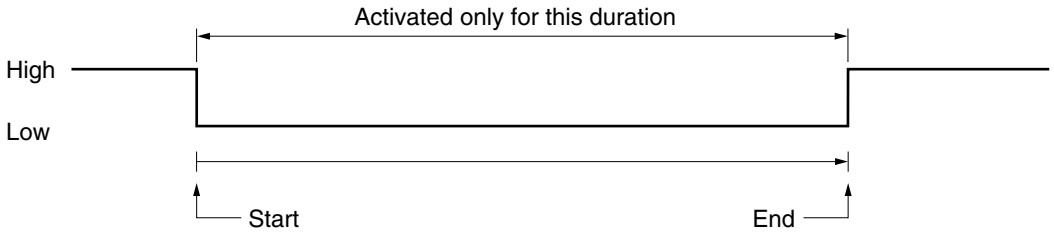
[Pulse trigger]

Use this method to activate operations for which no definite end can be defined, such as "VOL UP/DOWN" (Volume Up/Down), "LOADBANK" (Scene memory recall), and "CH ON." Minimum pulse width is 100 ms.

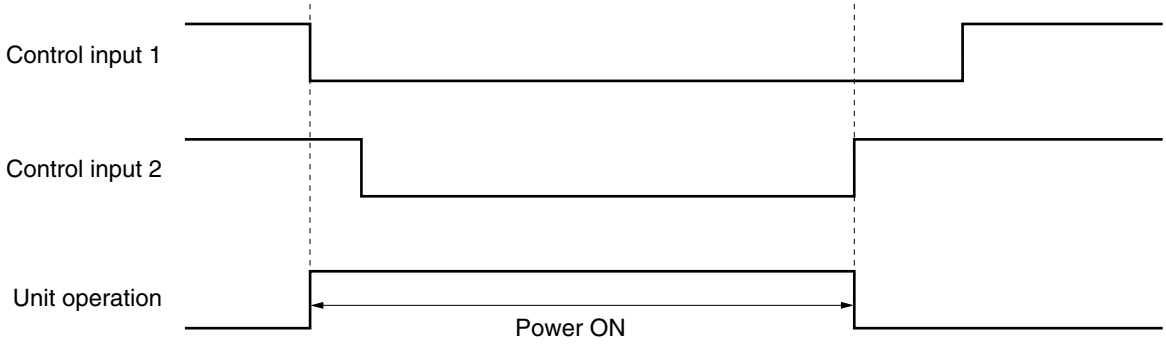


[Level trigger]

Use this method to activate "CH MUTE" (Channel mute), "POWER" (Power ON/OFF remote function), "EMG-MUTE" (Cut-off by emergency control), paging broadcasts, and other operations of which start and end must be defined.



For "CH MUTE," "POWER," and "EMG-MUTE" functions, if operated at the front panel (EMG-MUTE does not accept this access from the front panel) or if other control input to which the same function is assigned is fed, their states are changed by subsequent panel operations or control input activations. The following example shows the change in operation when POWER (Power ON/OFF remote function) is assigned to Control inputs 1 and 2;



Control input 1 will still keep the power ON after Control input 2 turns the power OFF, however the unit's power is OFF.

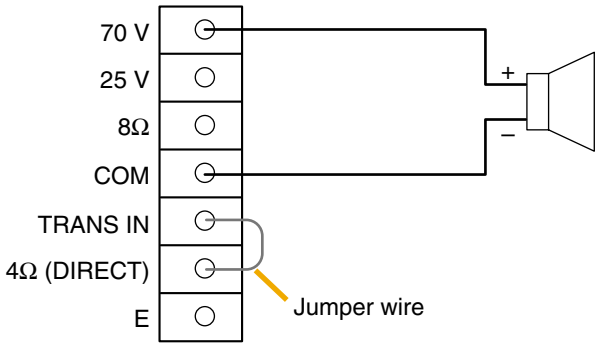
14.2. Speaker Output Terminal Connections (A-9060S and A-9120S only)

The A-9060S and A-9120S are equipped with speaker output terminals of 70 V, 25 V, and 8 Ω transformer output, and 4 Ω direct output.

14.2.1. Transformer output terminal connection

Connect the supplied jumper wire* between 4 Ω (DIRECT) and TRANS IN terminals as shown below.
Then, connect speakers to COM terminal and 70 V, 25 V, or 8 Ω terminal.

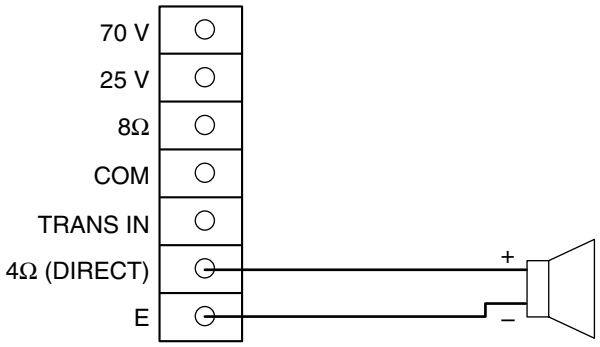
* So wired in the supplied plug when shipped from the factory.



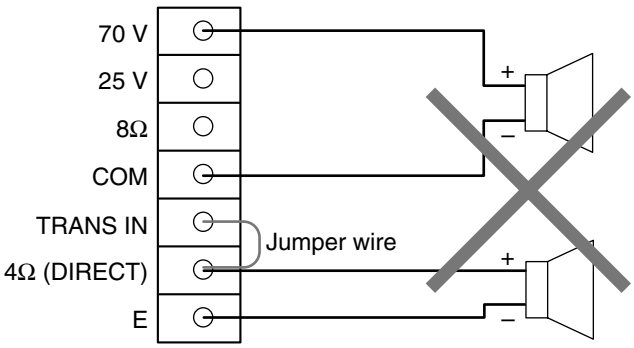
14.2.2. Direct output terminal connection

Remove the jumper wire* from the supplied plug, and connect a speaker to E and 4 Ω (DIRECT) terminals.

* Wired in the supplied plug when shipped from the factory.

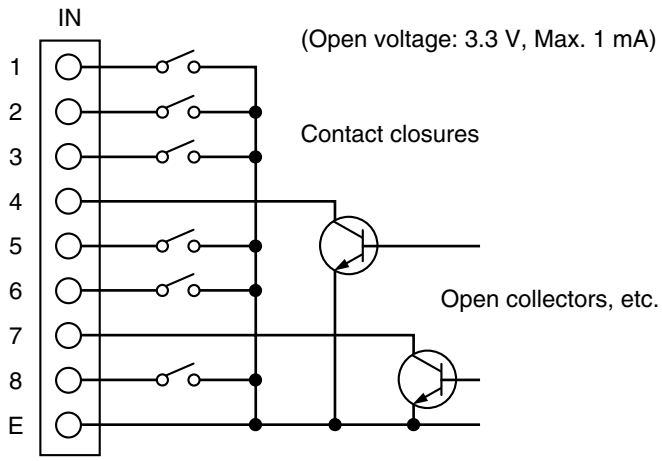


Note
Never connect speakers to the transformer output and 4 Ω direct output at the same time.
The amplifier could fail due to overload on it.



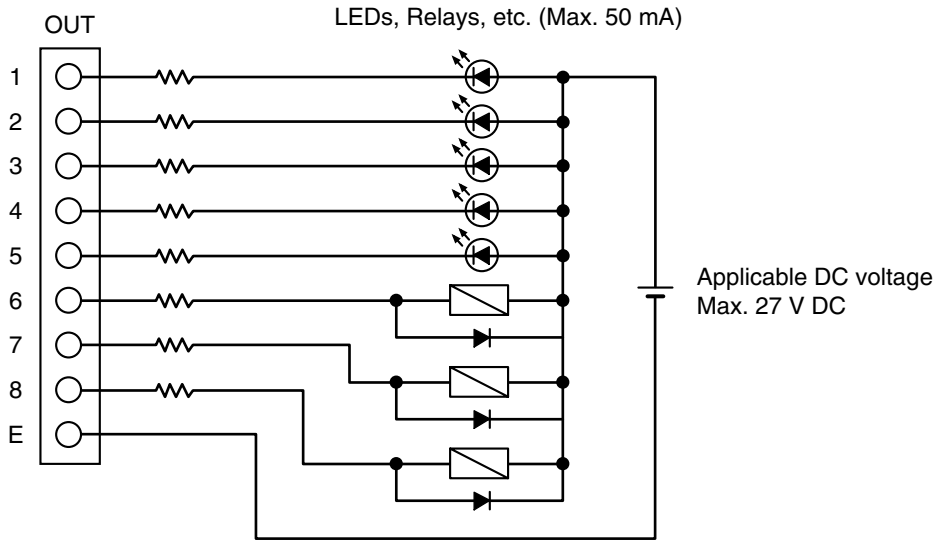
14.3. C-001T Module Connections

14.3.1. Control input terminal



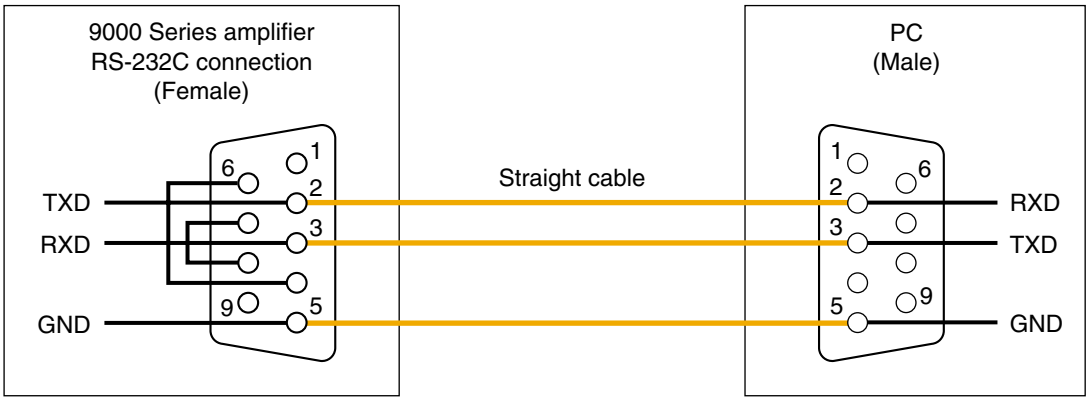
For operation by means of the control inputs, refer to p. 99 "Operation by control input."

14.3.2. Control output terminal



14.4. RS-232C Connector Connection

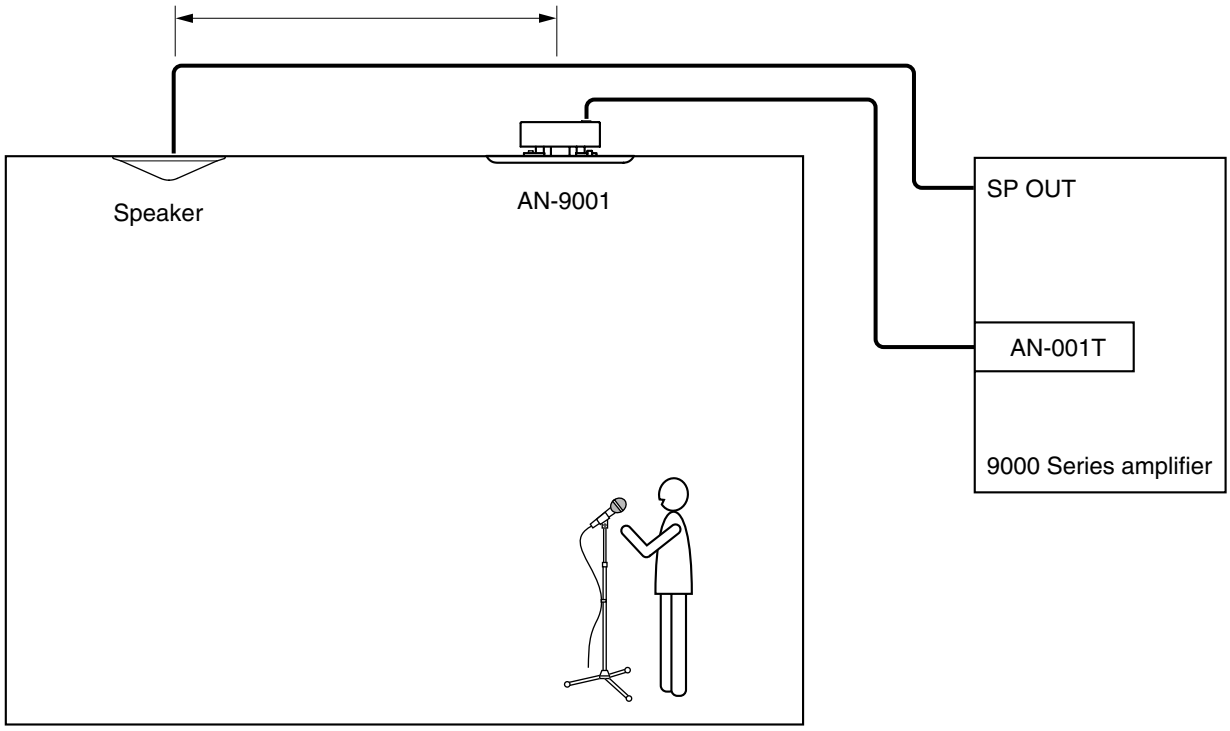
Use the straight cable when connecting a PC to the unit's RS-232C connector (9P, female).



14.5. AN-001T and AN-9001 Connections

The AN-001T and AN-9001 are connected as illustrated below and used to control the speaker sound volume in a room or such closed space.

Note
Keep the AN-9001 as distant as possible from a sound source (speaker, water supply pipe, or air conditioning).
If installed close to a sound source, the AN-9001 could sense it as ambient noise to control the speaker sound volume.



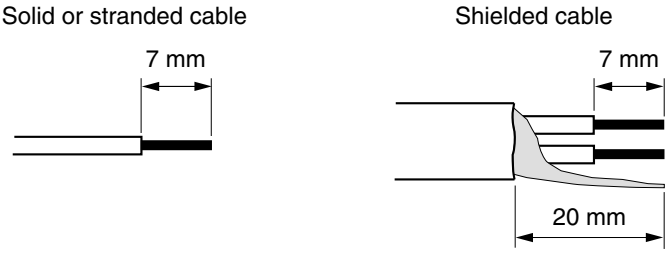
14.6. Removable Terminal Plug Connection

Be sure to use the supplied removable terminal plugs for connections to the removable terminal blocks.

Cautions

- Be sure to use shielded cables for audio signal lines.
- Avoid soldering stranded or shielded cable, as contact resistance may increase when the cable is tightened and the solder is crushed, possibly resulting in an excessive rise in joint temperatures.

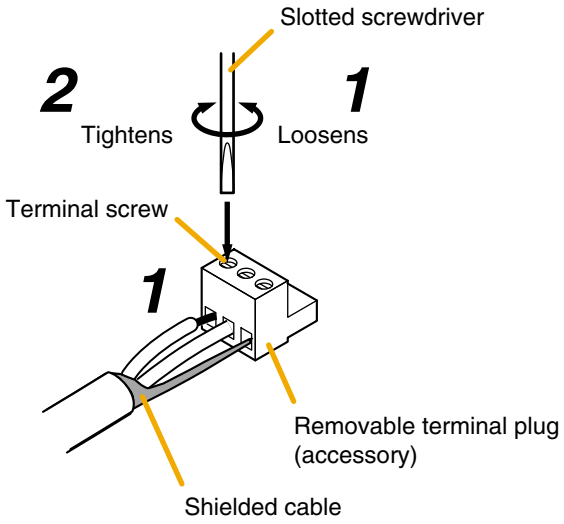
Cable end treatment



Connector connection

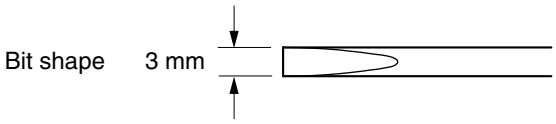
Step 1. Loosen the terminal screw, then insert the cable.

Step 2. Retighten the terminal screw. (Pull on the cable to ensure it is securely connected.)



Tip

Recommended slotted screwdriver type: Screwdriver with 3 mm blade width

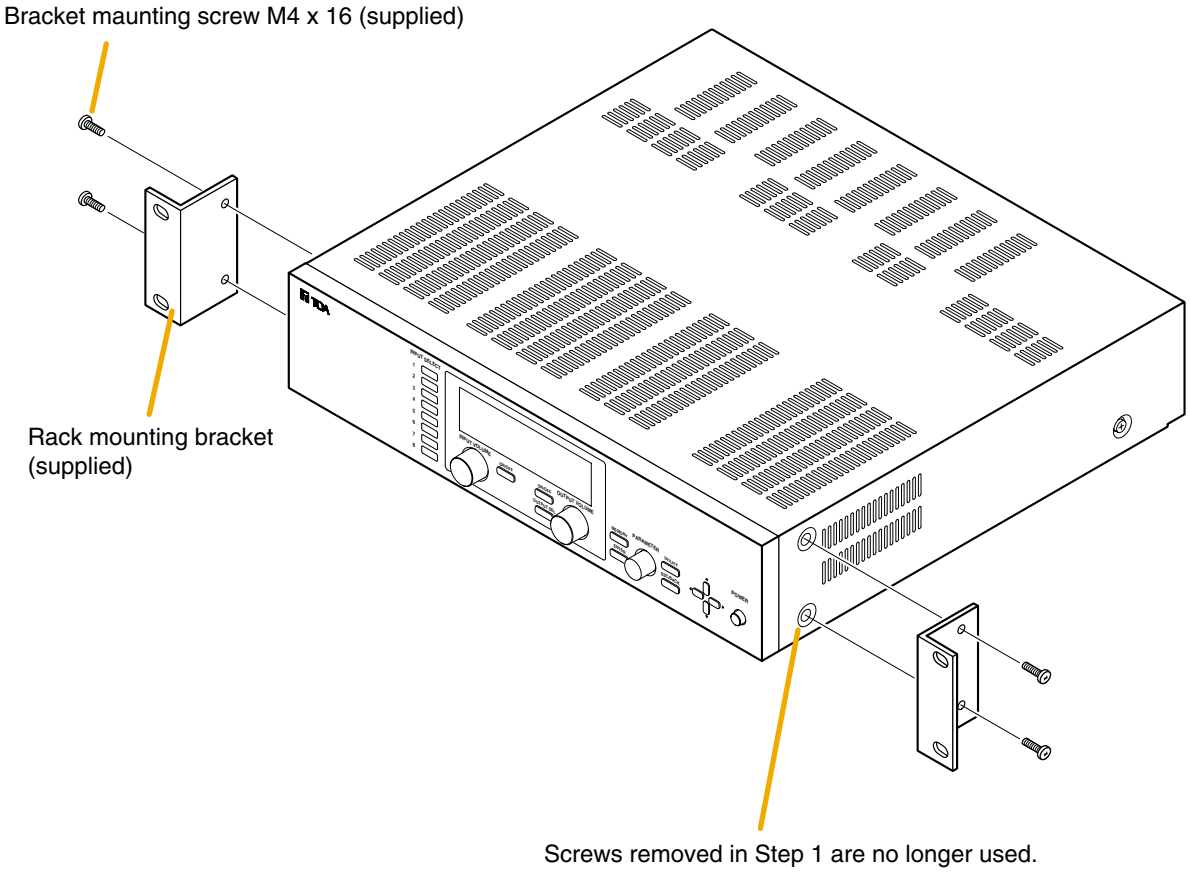


15. RACK MOUNTING BRACKET ATTACHMENT

Use the supplied rack mounting bracket when mounting the unit in an equipment rack.

Step 1. Remove four M4 x 8 screws on the sides.
The removed screws are no longer used.

Step 2. Attach the rack mounting bracket to the unit using the supplied four M4 x 16 bracket mounting screws.



Notes

- Remove 4 plastic feet on the bottom surface when mounting the unit in a rack.
- Rack mounting screws are not supplied with the unit. Use the screws that are appropriate for the rack.
- Install the unit at a well-ventilated place, and be sure to mount a 1U or more size perforated panel above and below the unit to prevent the unit's internal temperature rise.

16. AN-9001 INSTALLATION

Step 1. Install a 1-gang electrical box in a wall or ceiling.

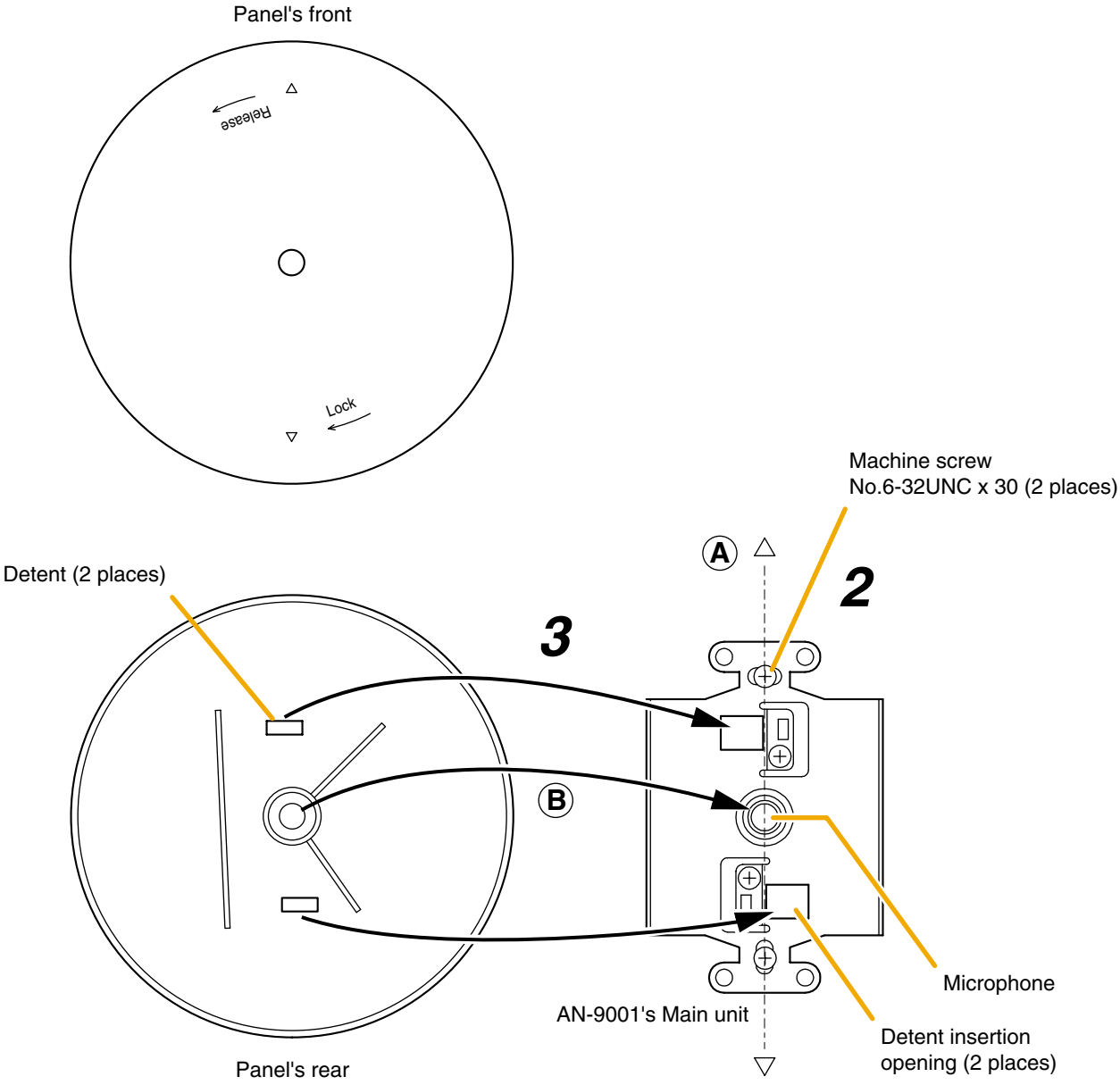
Step 2. Mount the AN-9001's Main unit to the installed electrical box.
Use the 2 screws (No.6-32UNC x 30) supplied with the AN-9001.

Note
The AN-9001 comes with 2 types of machine screws: No.6-32UNC x 30 (unified threads) and M4 x 30 (metric threads). Be sure to use correct ones.

Step 3. Let both detents on the panel's rear into the detent insertion openings of the Main unit.

Tips
For detent insertion, refer to the following points:
(A) Align 2 triangular marks on the panel with the extended line connecting between Main unit's mounting screws.
(B) Align the panel's center hole with the Main unit's microphone.

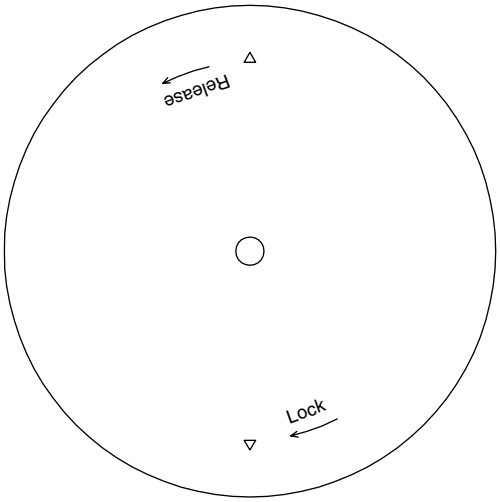
Step 4. Rotate the panel clockwise.
The panel locks into place by rotating it about 20° in the "Lock" direction.



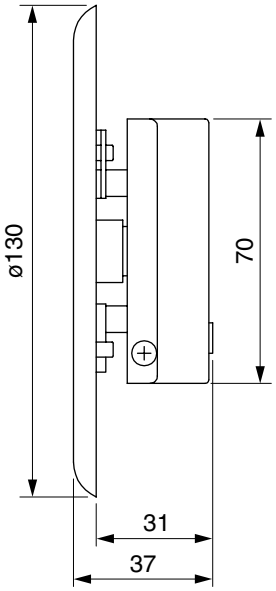
17. DIMENSIONAL DIAGRAMS

17.1. AN-9001

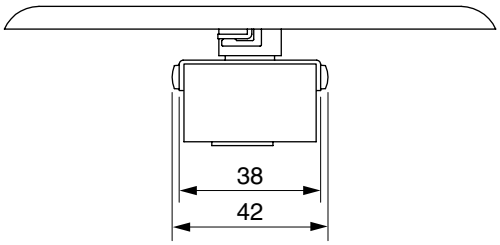
Unit: mm



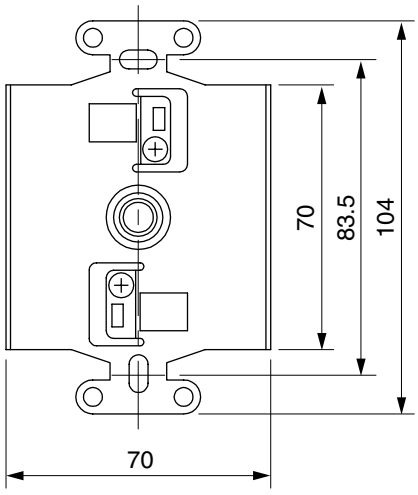
[Front]



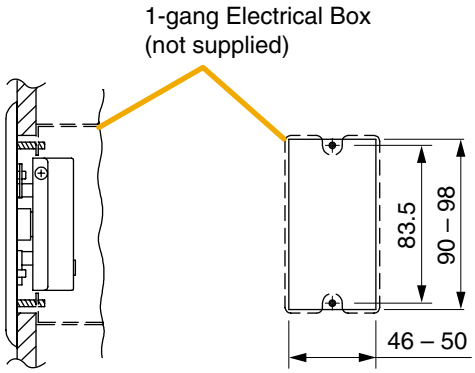
[Side]



[Bottom]



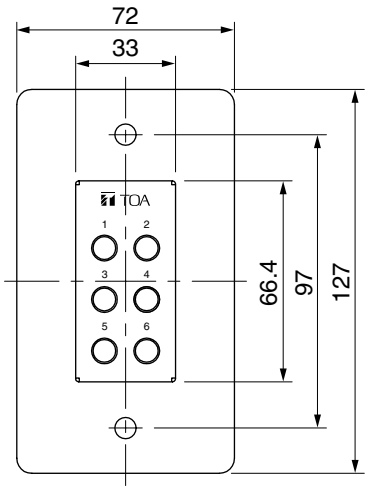
[Front view of Main unit]



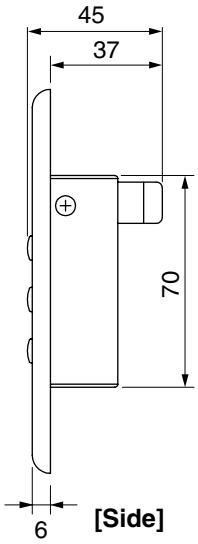
[Figure when mounted] [Dimensions of mounting opening]

17.2. ZM-9001

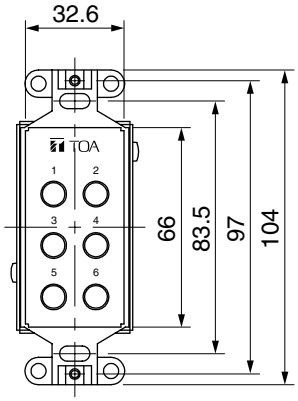
Unit: mm



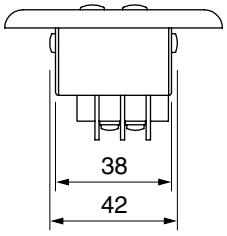
[Front]



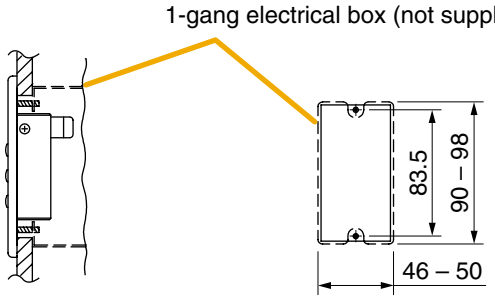
[Side]



[Front View without panel]



[Bottom]

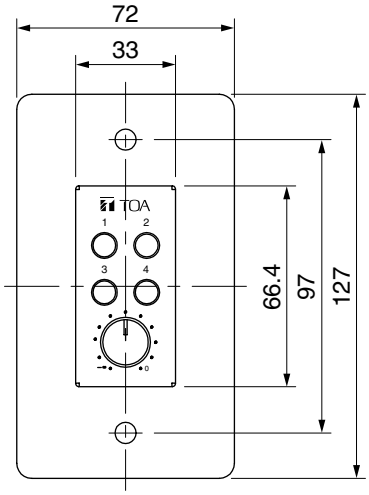


[Figure when mounted]

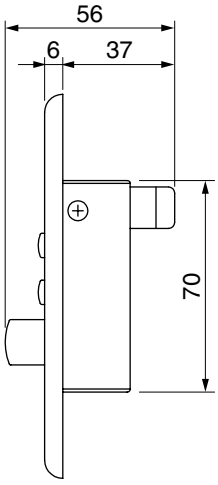
[Dimensions of mounting opening]

17.3. ZM-9002

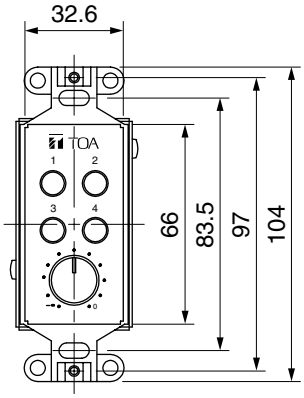
Unit: mm



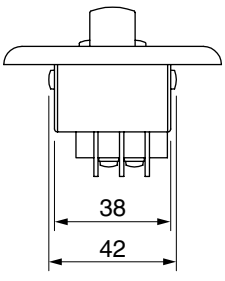
[Front]



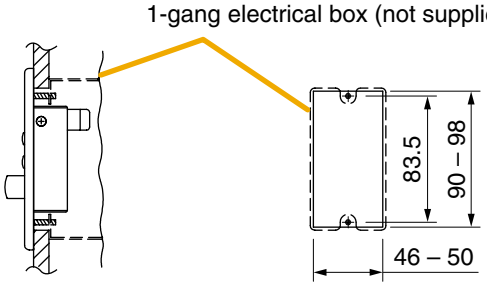
[Side]



[Front View without panel]



[Bottom]



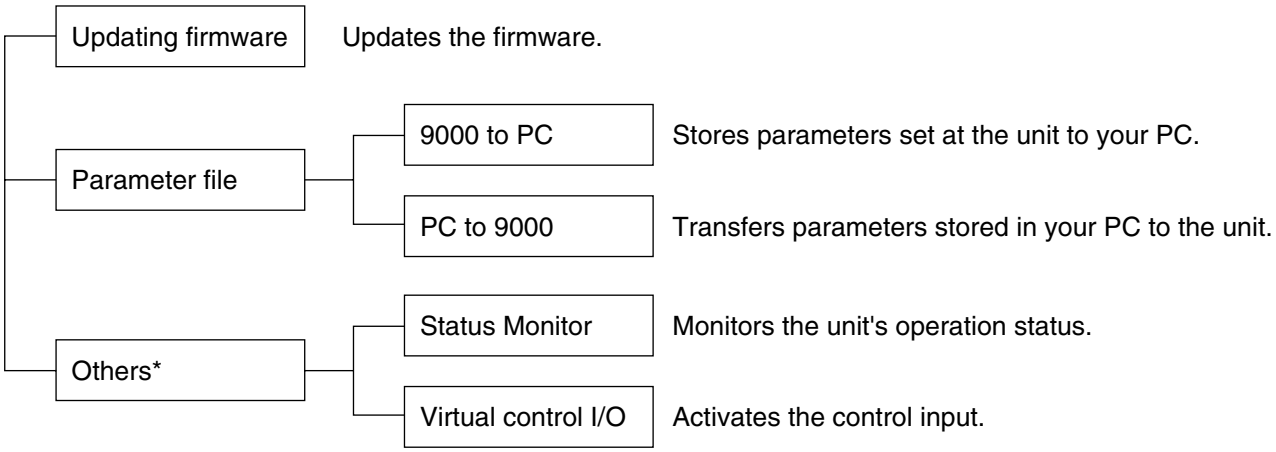
[Figure when mounted]

[Dimensions of mounting opening]

18. HOW TO USE THE SUPPLIED SOFTWARE

18.1. General Description

The supplied CD-ROM contains the A-9000 series maintenance software, which executes the following utility programs.



* Used to check the unit at installation.

[System requirements]

Ensure your PC operates on Windows XP and also meets the following requirements, or this software will not run properly.

Serial port: RS-232C port or compatible with USB-to-RS232C converter
Media & Drive: CD-ROM

Note: Windows is a trademark of Microsoft Corporation.

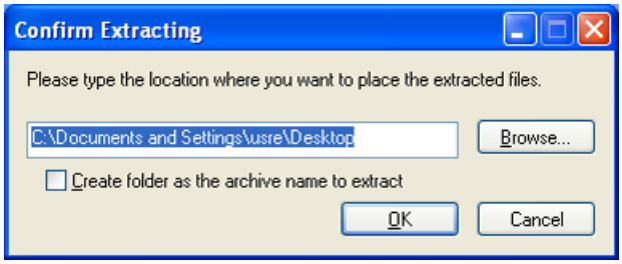
18.2. Installing the Software

Step 1. Load the supplied CD-ROM into the PC's CD-ROM drive.

Step 2. Double-click the "setup_a9k.exe" icon in the software folder.

Step 3. Designate the folder into which the 9000 series maintenance software is extracted, and click the "OK" button.

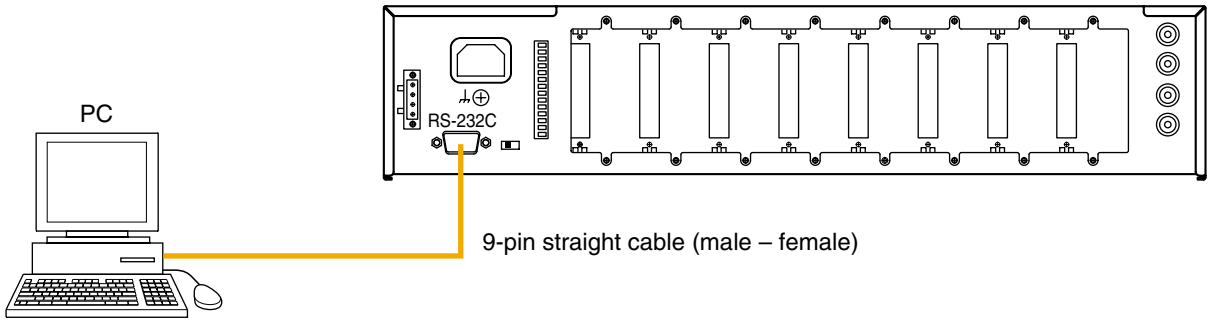
Note
After installation completion, only the software icon is created in the folder designated in the screen at right. The software execution file is moved into the automatically created C:/ProgramFiles/TOA folder after being extracted.


Confirm Extracting
Please type the location where you want to place the extracted files.
C:\Documents and Settings\usre\Desktop
Browse...
Create folder as the archive name to extract
OK
Cancel

Step 4. After installation completion, confirm the "MaintCtrl.exe" icon is created in the folder designated in Step 3.

18.3. Connecting the Unit to the PC

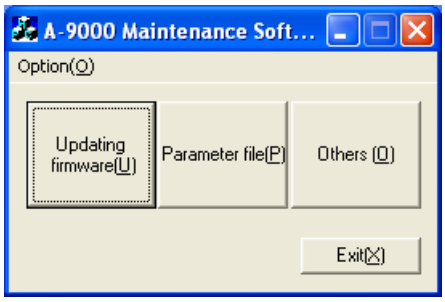
Connect the unit's RS-232C port and the PC's RS-232C port with a 9-pin straight cable (male - female).



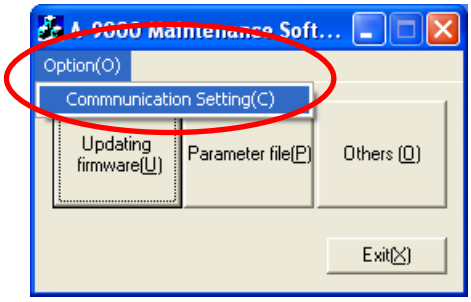
18.4. Setting the Communication Port and Speed

Set the PC's communication port and speed according to the procedure below.

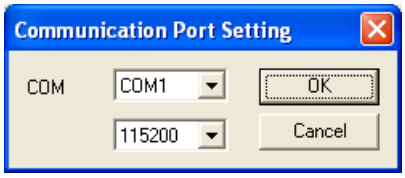
Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.



Step 2. Pull down the menu from the "Option" button and select "Communication Setting."



The screen at right is displayed.

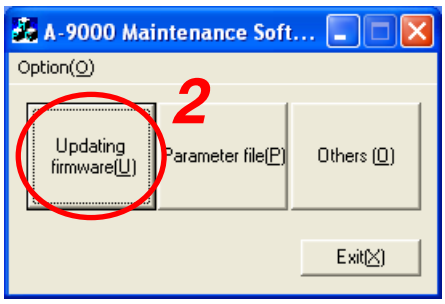


Step 3. Select the communication port and speed to match the connected PC.
Then, click the "OK" button.
The COM port is factory-preset to "COM1" and the communication speed to "57600."

18.5. Updating the Firmware

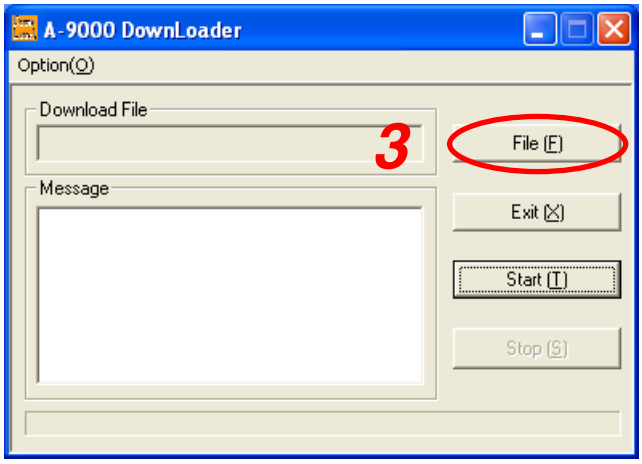
Our latest A-9000 firmware is made available on our product information download site (http://www.toa-products.com/international/). You can also obtain the latest version by downloading it.
The communication speed is fixed to a given value during updating irrespective of its setting.

Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.

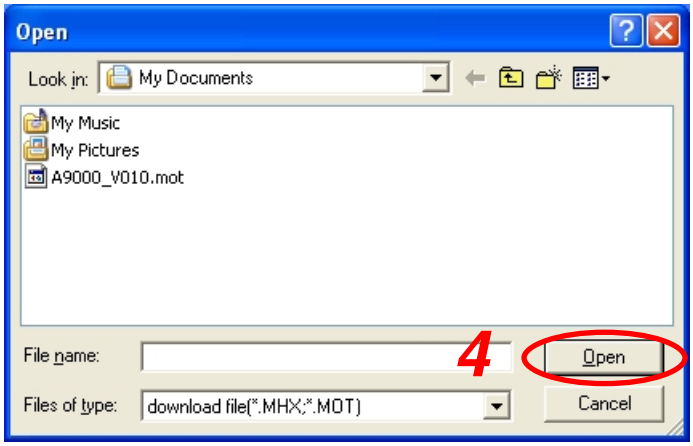


Step 2. Click the "Updating firmware" button.
The window at right opens.
The communication status is displayed in the "Message" box.

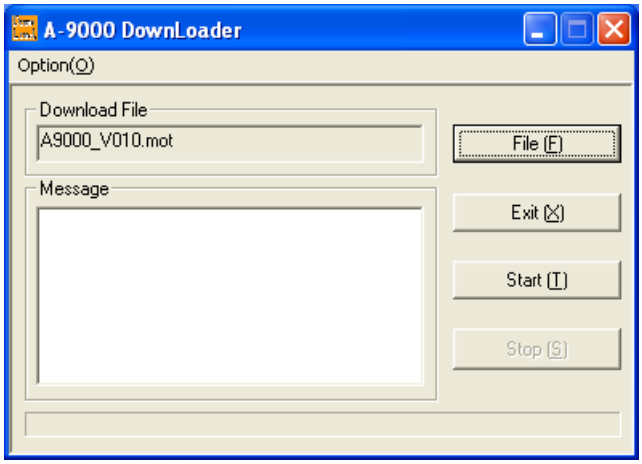
Tip
You can also set the communication port here when pressing the "Option" button on the menu bar to select "Communication Setting."



Step 3. Click the "File" button.
The window at right opens.



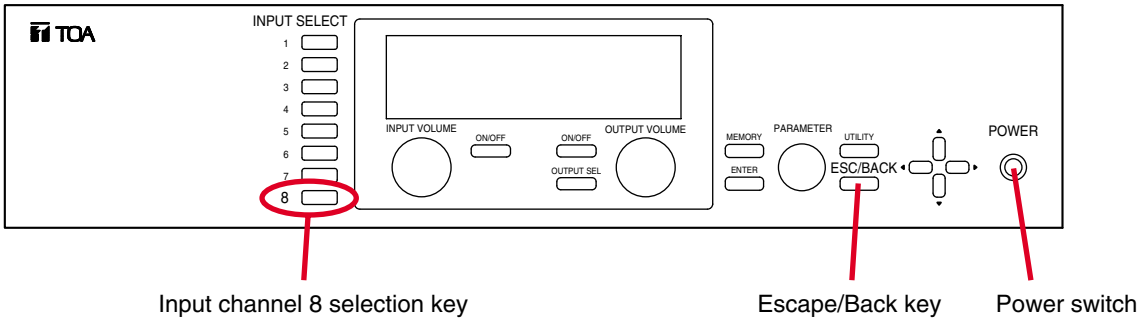
Step 4. Select the file, then click the "Open" button.
The selected download file is entered in the "Download File" box.



Step 5. Perform the following key operations at the unit to make the unit ready for data reception from the PC.

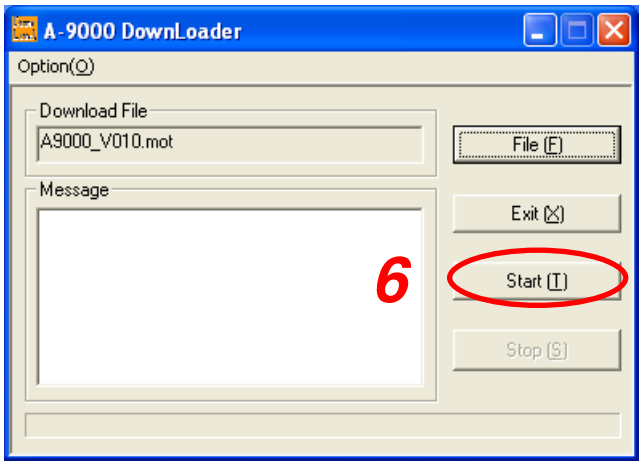
5-1. Turn the power switch off.

5-2. Press the Input channel 8 selection key, Escape/Back key, and Power switch at the same time.
The unit is placed in standby mode for communications with the PC.

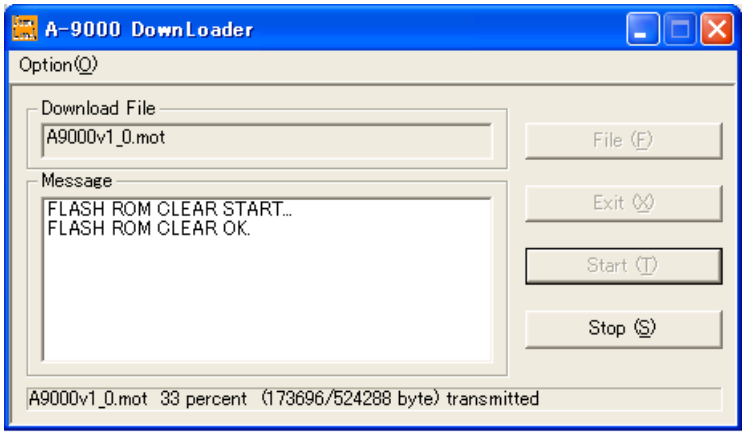


Input channel 8 selection key Escape/Back key Power switch

Step 6. Click the "Start" button to start the firmware file transfer.



The window at right opens.



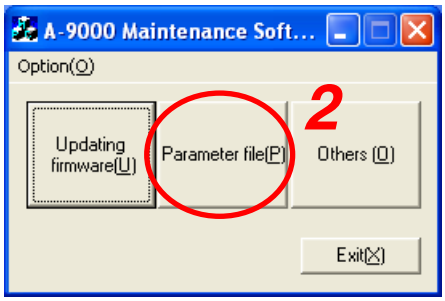
Step 7. Click the "Exit" button to terminate the program after download completion.
The screen returns to the initial menu screen in Step 1.

Note
After update completion, the communication speed is initialized to the default value.
Reset it as needed. (Refer to p. 110 "Setting the Communication Port and Speed.")

18.6. Storing or Recalling Parameters Set at the Unit

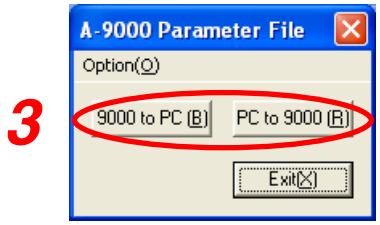
You can back up the parameters set at the unit to your PC, or transfer the parameters stored in your PC to the unit.

Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.

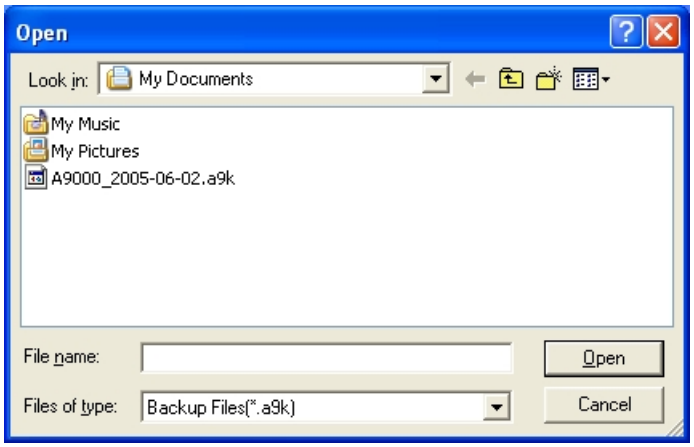


Step 2. Click the "Parameter file" button.
The window at right opens.

Tip
You can also set the communication port and speed here when pressing the "Option" button on the menu bar to select "Communication Setting."



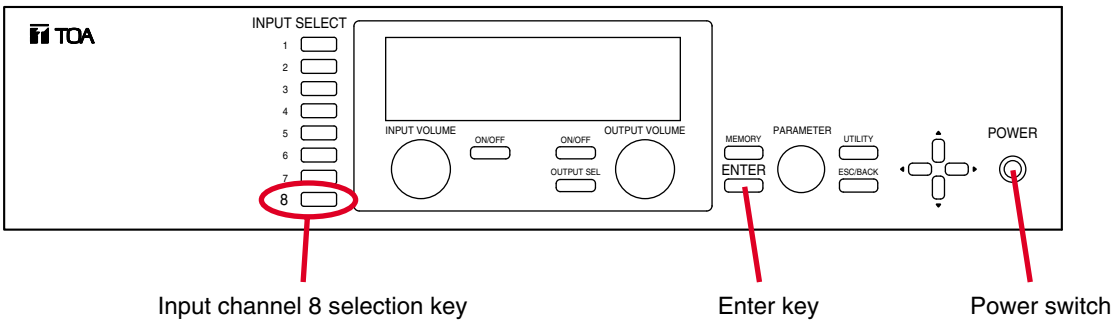
Step 3. Click the "9000 to PC" button when storing parameters set at the unit to your PC, while click the "PC to 9000" button to transfer parameters stored in your PC to the unit.
The window at right opens.



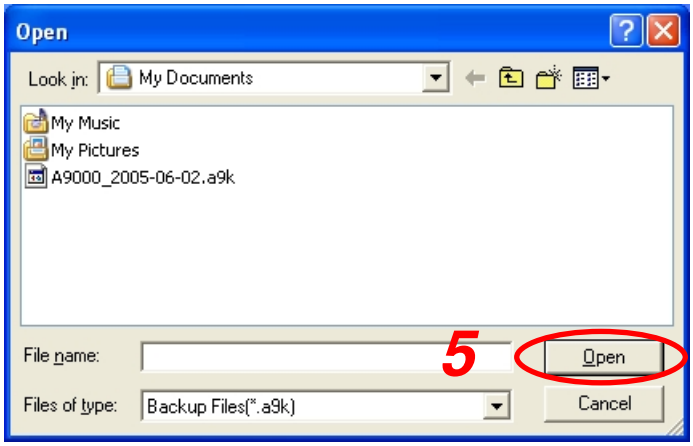
Step 4. Perform the following key operations at the unit to permit data transmission/reception between the unit and the PC.

4-1. Turn the power switch off.

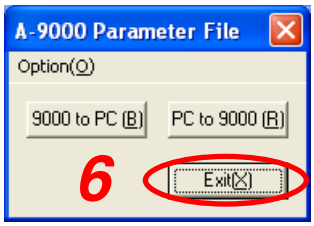
4-2. Press the Input channel 8 selection key, Enter key, and Power switch at the same time.
The unit is placed in standby mode for communications with the PC.



Step 5. Select the file, then click the "Open" button.
The set parameters are transferred from the unit to the PC or from the PC to the unit.



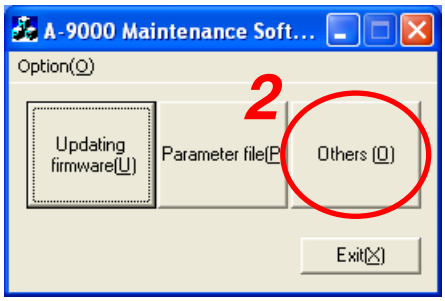
Step 6. Click the "Exit" button to terminate the program after data transmission completion.
The screen returns to the initial menu screen in Step 1.



18.7. Monitoring the Unit's Operation Status

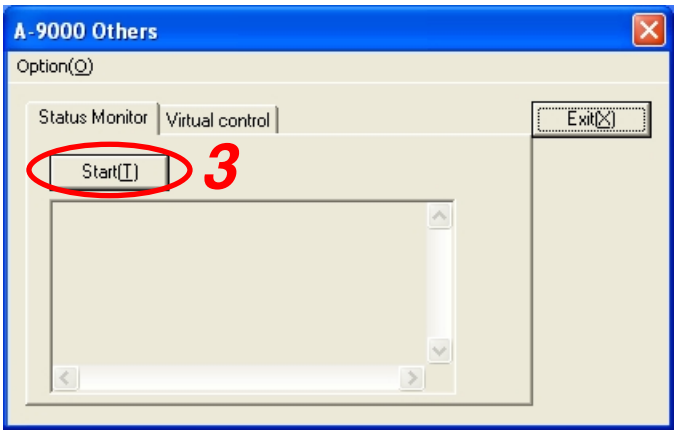
The operation status of the unit can be monitored in real time.

Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.

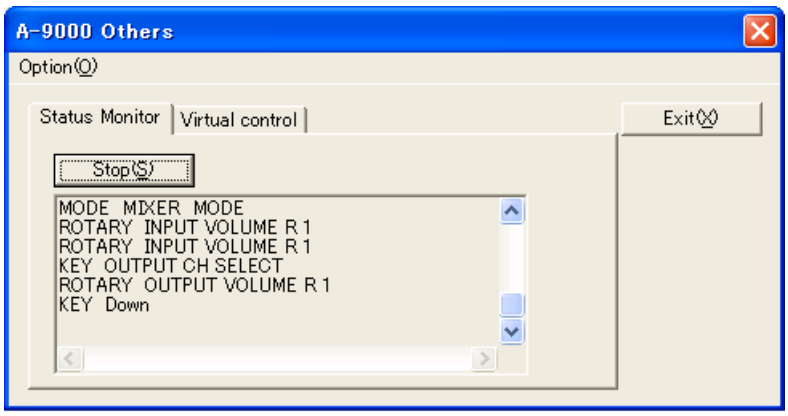


Step 2. Click the "Others" button.
The window at right opens.

Tip
You can also set the communication port and speed here when pressing the "Option" button on the menu bar to select "Communication Setting."



Step 3. Click the "Start" button.
Operation status such as the unit's key or knob actions is displayed in real time.

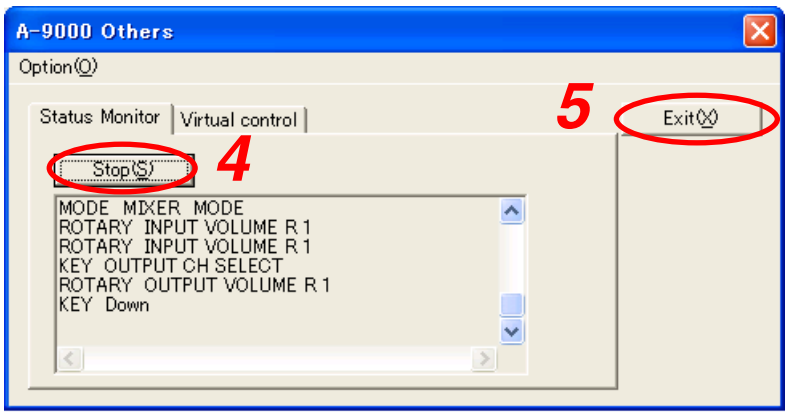


[Screen indications and their descriptions]

Indication	Description
KEY INPUT SELECT 1	INPUT SELECT 1 key has been pressed.
KEY POWER long	Power switch has been pressed long.
KEY UTILITY & ESC/BACK	UTILITY key and ESC/BACK key have been pressed at the same time.
ROTARY INPUT VOLUME L 1	INPUT VOLUME control has been turned one click counterclockwise.
CIN CONTROL INPUT 2 (ON)	Control input 2 terminal has been turned on.
MATRIX MODE	Unit is operating in matrix mode.
MIXER MODE	Unit is operating in mixer mode.
POWER ON	Power has been turned on.

Step 4. To stop monitoring, click the "Stop" button.

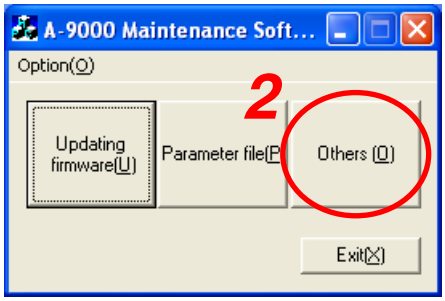
Step 5. Click the "Exit" button to terminate the program.
The screen returns to the initial menu screen in Step 1.



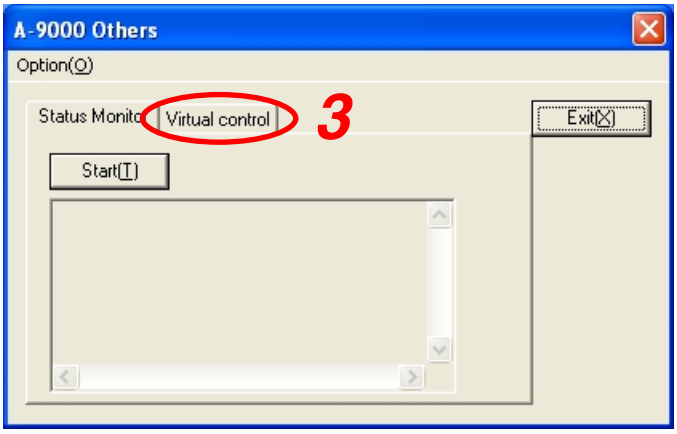
18.8. Activating the Control Input

You can simulate the unit's control input activation through PC operation.

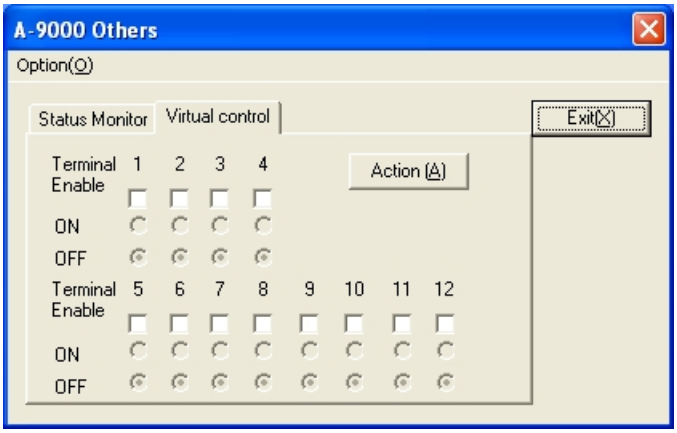
Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.



Step 2. Click the "Others" button.
The window at right opens.



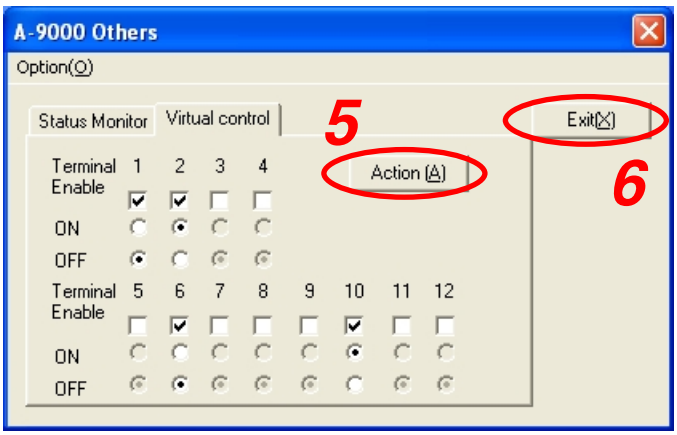
Step 3. Click the "Virtual control" tab.
The window at right opens.
Terminal 1 – 12 represent the control input terminal numbers.



Step 4. Tick the "Enable" boxes of the control inputs you want to activate, then select either ON or OFF.

Step 5. Click the "Action" button.
The Control inputs set to ON are activated.

Step 6. Click the "Exit" button to terminate the program.
The screen returns to the initial menu screen in Step 1.



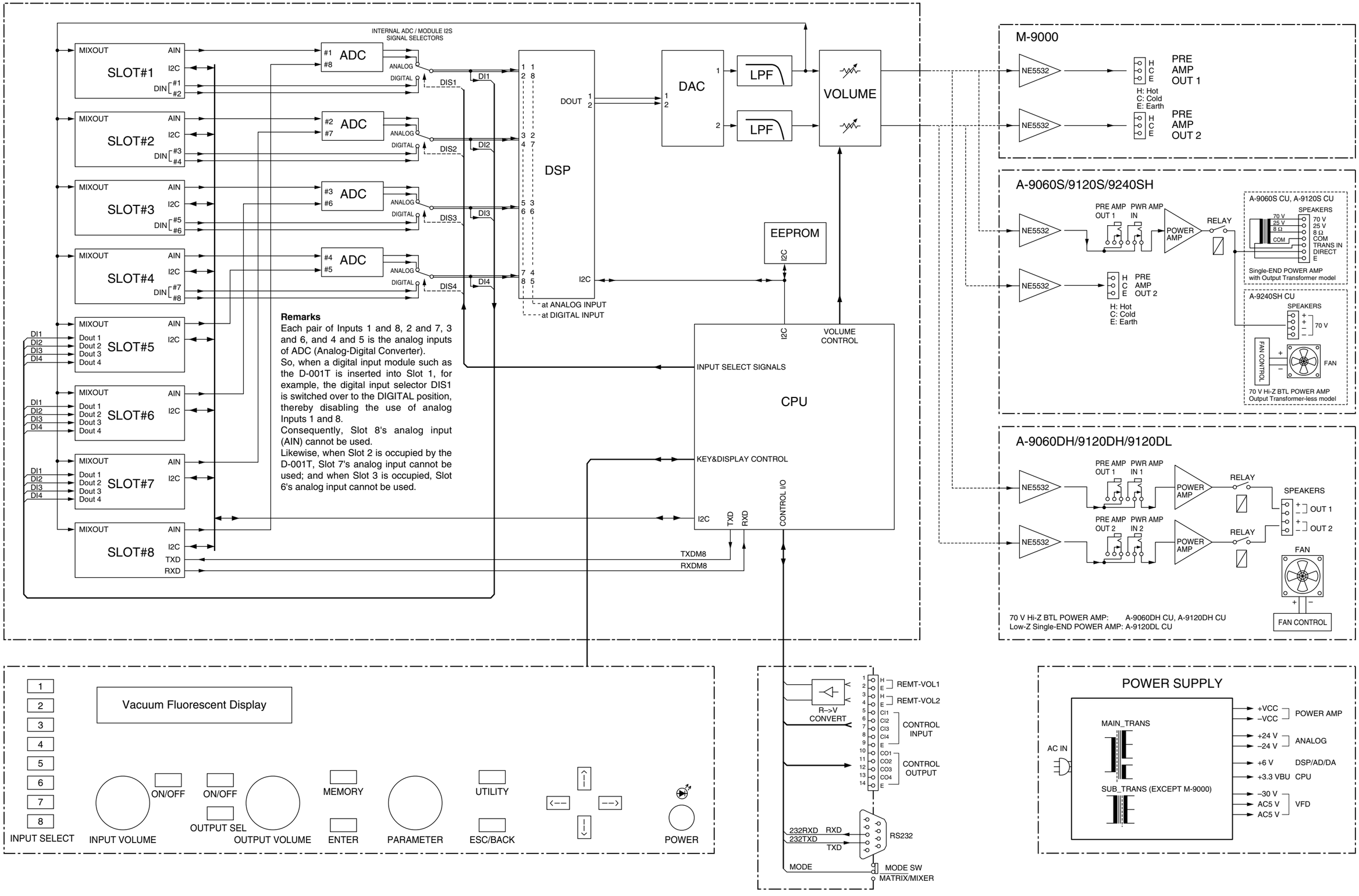
19. ERROR INDICATIONS

Error indications	Possible cause and Remedy
MODULE SLOT#No. ERROR	A module is inserted into a wrong slot. Check to confirm that each module is inserted into a correct slot, and correctly reinsert the module inserted into the wrong slot. (Refer to p. 94 "MODULE INSTALLATION.")
DC PROTECT (OUTPUT #No.)	There may be overload or excessive signal input. Check input and output signal levels and gain settings, then adjust them as necessary. If the indicator remains lit, consult your TOA dealer.
THERMAL PROTECT	The unit is heated to a high temperature. Check that the unit is properly installed. (Refer to p. 11 "INSTALLATION PRECAUTIONS.") Disconnect the AC cord from the unit, and allow the unit to cool for a while. The unit automatically resumes operation when its inner temperature decreases. If this happens frequently, contact your TOA dealer.
ERASE MIXER MEMO?	The unit's Mode switch was shifted from the Mixer mode to the Matrix mode while the AC power supply was shut off. Press the Enter key to erase the data set in the Mixer mode inside the unit.
ERASE MATRIX MEMO?	The unit's Mode switch was shifted from the Matrix mode to the Mixer mode while the AC power supply was shut off. Press the Enter key to erase the data set in the Matrix mode inside the unit.
INITIALIZE MEMORY?	Module-to-Slot configuration was changed or a module was damaged. Press the Enter key to initialize the memory to default settings. Or press the Escape/Back key to display "MODULE SLOT#No ERROR", then check the error slot. Reinsert the correct module into the slot.
The Fault indicator lights.	A communication error between the unit and module occurred. Disconnect the AC power supply, then reconnect it. If the indicator remains lit, this may indicate a unit failure. Consult your TOA dealer.

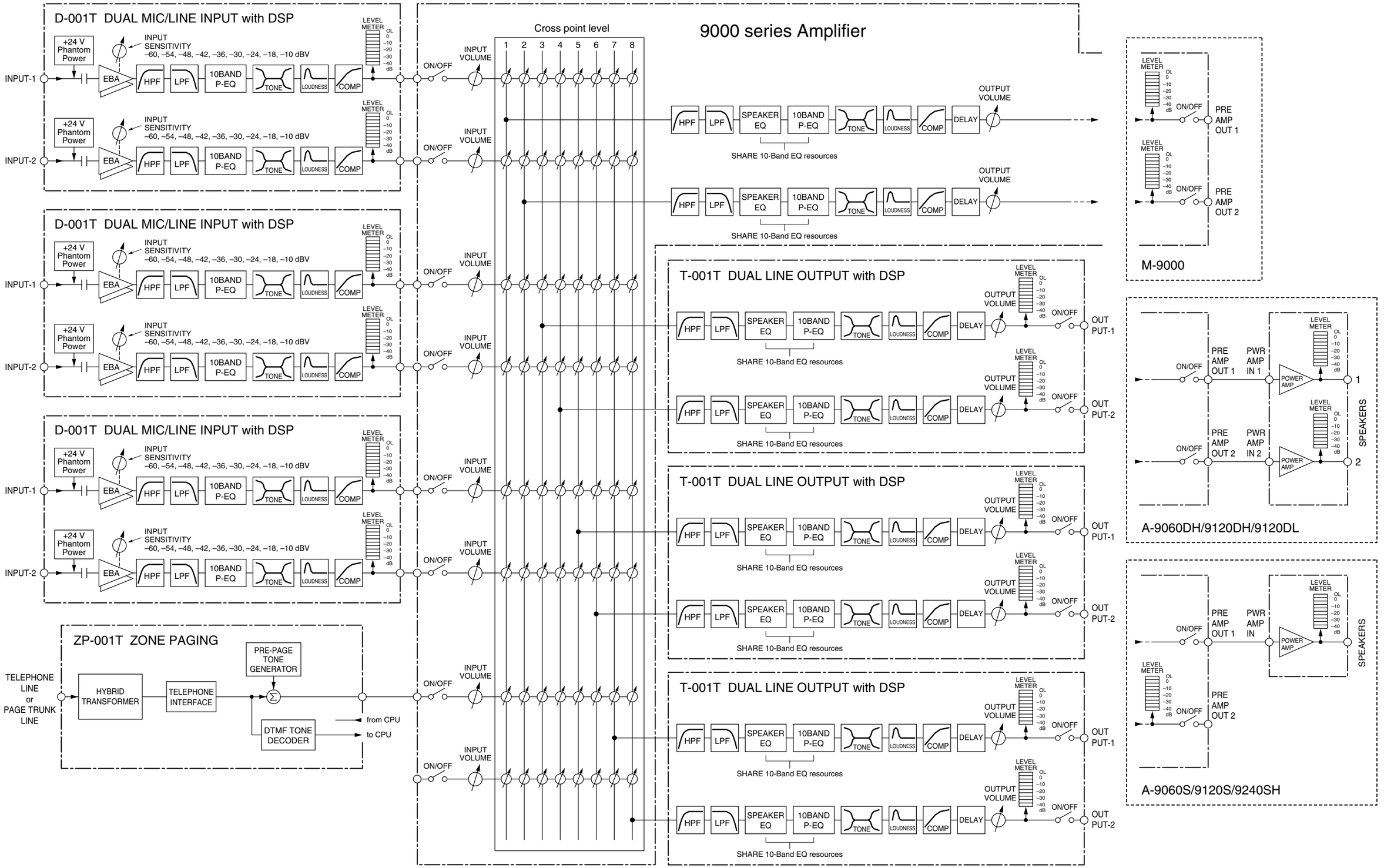
20. TROUBLESHOOTING

Symptom	Possible Cause	Remedy
Noise generated.	Module mounting screw not securely tightened.	If this screw is loose, noise may be produced. Ensure that the screw is tightened.
Excessive noise.	Incorrect module input sensitivity setting.	The unit is designed to digitize audio signals with an AD converter and vary the input level with a digital volume control. Therefore, noise increases if the input or output volume control is set to a level higher than 0 dB while the AD converter input is kept low.
Sound distorted.	Incorrect module input sensitivity setting.	The unit is designed to digitize audio signals with an AD converter and vary the input level with a digital volume control. Therefore, when an extremely large input is fed into the AD converter, the voice remains distorted even if the volume is decreased.
Phantom power not supplied.	D-001T module mounting screw not securely tightened.	If this screw is loose, phantom power is not supplied. Ensure that the module mounting screw is tightened.
Phantom power not supplied.	Phantom power set to OFF in D-001T module input setting.	If phantom power is set to OFF in D-001T module input setting, phantom power is not supplied. Set phantom power to ON in the setting.
Condenser microphone does not operate correctly.	Condenser microphone of the type powered by over +24 V is used.	The D-001T module's phantom power supplies +24 V. If using a condenser microphone powered by over +24 V, separately prepare phantom power supply equipment recommended by the equipment manufacturer.
Amplifier malfunctioned (does not operated as intended.)	Incorrect item or parameter setting.	Check the related setting items and set contents.

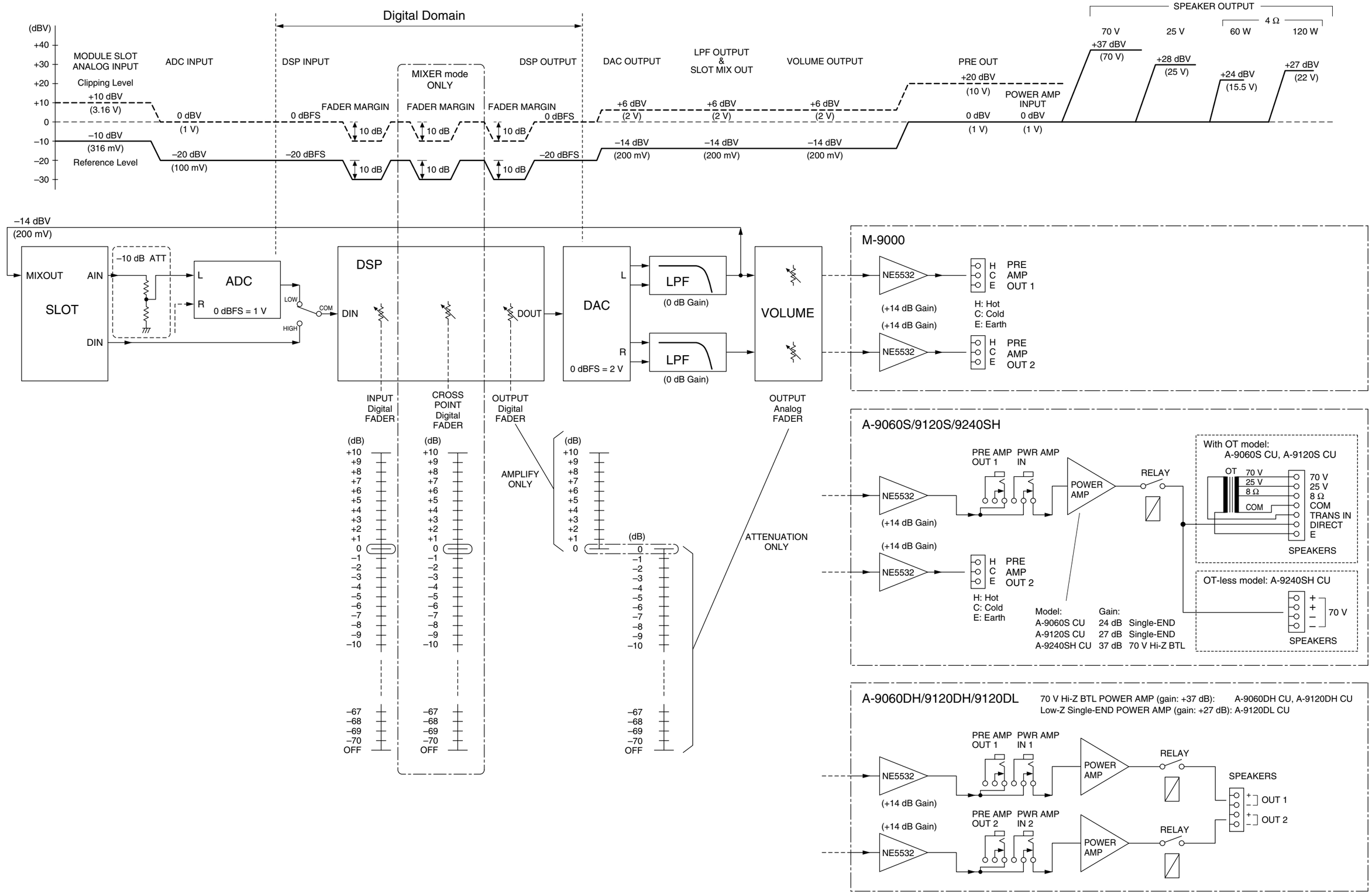
21. BLOCK DIAGRAM



22. SIGNAL FLOW DIAGRAM



23. LEVEL DIAGRAM



24. SPECIFICATIONS

24.1. M-9000

Power Source	120 V AC, 60 Hz
Power Consumption	40 W
Audio Input	Max. 8 channels, modular construction (modules optional)
Audio Output	Preamplifier output 1, 2: 0 dB*1, 600 Ω, balanced, removable terminal block (3 pins)
Module Slot	Analog input (slot 1 – 8): –10 dB*1, 10 kΩ, unbalanced Digital input (slot 1 – 4): 24 bit/48 kHz MIX output (slot 1 – 8): –14 dB*1, 330 Ω (CH1 prefader output), unbalanced Digital output (slot 5 – 7): 24 bit/48 kHz Power supply (slot 1 – 8): +24 V, –24 V, +6 V DC
Digital Audio Signal Reference Level	–20 dB FS
Frequency Response	20 – 20,000 Hz, +1, -3 dB
Total Harmonic Distortion	0.008% (at 22 kHz LPF, 1 kHz, +10 dB*1 output)
S/N Ratio	At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting Output volume min.: 90 dB Output volume max.: 61 dB (input 1 volume: 0 dB, other inputs: OFF)
Cross Talk	Over 64 dB (at 20 kHz)
Tone Control	Bass: ±12 dB (at 100 Hz), Treble: ±12 dB (at 10 kHz)
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5
Speaker Equalizer	15 (compatible with TOA speakers only)
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps
Compressor	Depth: 1 – 5
Delay	0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2), mixer mode only
Scene/Event Memory	32
Operation Mode	Matrix mode/Mixer mode (selector switch)
Auxiliary Function	Key lock function
Control Input/Output	RS-232C*2, D-sub connector (9P, female) Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA, removable terminal block (14 pins) Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block (14 pins) Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or input the DC voltage of 0 to +10 V, removable terminal block (14 pins)
Operating Temperature	–10 to +40°C
Operating Humidity	35% to 80% RH (no condensation)
Finish	Panel: Aluminum, hair-line, black Case: Surface-treated steel plate, black, paint
Dimensions	420 (w) x 107.6 (h) x 353 (d) mm
Weight	6 kg

*1 0 dB = 1 V

*2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

Notes

- The design and specifications are subject to change without notice for improvement.
- AMX is a trademark of AMX Corporation.
- Crestron is a trademark of Crestron Electronics, Inc.

• Accessories

Power cord (2 m) 1
Rack mounting bracket 2
Bracket mounting screw (M4 x 16) 4
Blank panel 7
Blank panel mounting screw (M3 x 8) 14
Removable terminal plug (3 pins) 2
Removable terminal plug (14 pins) 1
CD-ROM 1
Start guide 1

24.2. A-9060DH, A-9120DH

Model No.	A-9060DH	A-9120DH
Power Source	120 V AC, 60 Hz	
Power Consumption	150 W	250 W
Audio Input	Max. 8 channels, modular construction (modules optional) Power amplifier input 1, 2: 0 dB*1, 10 kΩ, RCA pin jack	
Audio Output		
Preamplifier Output 1, 2	0 dB*1, 300 Ω, unbalanced, RCA pin jack	
Speaker Output 1, 2	60 W, 83 Ω x 2, BTL output, removable terminal block (4 pins)	120 W, 41 Ω x 2, BTL output, removable terminal block (4 pins)
Module Slot	Analog input (slot 1 – 8): –10 dB*1, 10 kΩ, unbalanced Digital input (slot 1 – 4): 24 bit/48 kHz MIX output (slot 1 – 8): –14 dB*1, 330 Ω (CH1 prefader output), unbalanced Digital output (slot 5 – 7): 24 bit/48 kHz Power supply (slot 1 – 8): +24 V, –24 V, +6 V DC	
Digital Audio Signal Reference Level	–20 dB FS	
Power Bandwidth	20 – 20,000 Hz, 0.008% THD	
Frequency Response	Power amplifier section: 20 – 20,000 Hz, +0, –1 dB Analog input module to speaker output: 20 – 20,000 Hz, +1, –3 dB	
Total Harmonic Distortion	Power amplifier section: 0.0008% (22 kHz LPF, 1 kHz, rated power) Analog input module to speaker output: 0.008% (22 kHz LPF, 1 kHz, rated power)	
S/N Ratio	At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting Output volume min.: 90 dB (preamplifier output) Output volume max.: 61 dB (preamplifier output, input 1 volume: 0 dB, other inputs: OFF) Power amplifier section: 110 dB	
Cross Talk	Over 64 dB (at 20 kHz)	
Tone Control	Bass: ±12 dB (at 100 Hz) Treble: ±12 dB (at 10 kHz)	
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5	
Speaker Equalizer	15 (compatible with TOA speakers only)	
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps	
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps	
Compressor	Depth: 1 – 5	
Delay	0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2), mixer mode only	
Scene/Event Memory	32	
Operation Mode	Matrix mode/Mixer mode (selector switch)	
Auxiliary Function	Key lock function	
Control Input/Output	RS-232C*2, D-sub connector (9P, female) Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA, removable terminal block (14 pins) Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block (14 pins) Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or input the DC voltage of 0 to +10 V, removable terminal block (14 pins)	
Operating Temperature	–10 to +40°C	
Operating Humidity	35% to 80% RH (no condensation)	
Finish	Panel: Aluminum, hair-line, black Case: Surface-treated steel plate, black, paint	
Dimensions	420 (w) x 107.6 (h) x 395 (d) mm	
Weight	9 kg	11 kg

*1 0 dB = 1 V
*2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

Notes
- The design and specifications are subject to change without notice for improvement.
- AMX is a trademark of AMX Corporation.
- Crestron is a trademark of Crestron Electronics, Inc.

• Accessories

Power cord (2 m) 1
Rack mounting bracket 2
Bracket mounting screw (M4 x 16) 4
Blank panel 7
Blank panel mounting screw (M3 x 8) 14
Removable terminal plug (4 pins) 1
Removable terminal plug (14 pins) 1
CD-ROM 1
Start guide 1

24.3. A-9120DL

Power Source	120 V AC, 60 Hz
Power Consumption	260 W
Audio Input	Max. 8 channels, modular construction (modules optional) Power amplifier input 1, 2: 0 dB*1, 10 kΩ, RCA pin jack
Audio Output	Preamplifier output 1, 2: 0 dB*1, 300 Ω, unbalanced, RCA pin jack Speaker output 1, 2: 4 – 16 Ω, unbalanced, removable terminal block (4 pins), 120 W x 2 (4 Ω load), 70 W x 2 (8 Ω load), 40 W x 2 (16 Ω load)
Module Slot	Analog input (slot 1 – 8): –10 dB*1, 10 kΩ, unbalanced Digital input (slot 1 – 4): 24 bit/48 kHz MIX output (slot 1 – 8): –14 dB*1, 330 Ω (CH1 prefader output), unbalanced Digital output (slot 5 – 7): 24 bit/48 kHz Power supply (slot 1 – 8): +24 V, –24 V, +6 V DC
Digital Audio Signal Reference Level	–20 dB FS
Power Bandwidth	20 – 20,000 Hz, 0.02% THD
Frequency Response	Power amplifier section: 20 – 20,000 Hz, +0, –1 dB Analog input module to speaker output: 20 – 20,000 Hz, +1, –3 dB
Total Harmonic Distortion	Power amplifier section: 0.0008% (8 Ω, 16 Ω rated power) 0.002% (4 Ω rated power) Analog input module to speaker output: 0.008% (22 kHz LPF, 1 kHz, rated power)
S/N Ratio	At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting Output volume min.: 90 dB (preamplifier output) Output volume max.: 61 dB (preamplifier output, input 1 volume: 0 dB, other inputs: OFF) Power amplifier section: 110 dB
Cross Talk	Over 64 dB (at 20 kHz)
Tone Control	Bass: ±12 dB (at 100 Hz), Treble: ±12 dB (at 10 kHz)
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5
Speaker Equalizer	15 (compatible with TOA speakers only)
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps
Compressor	Depth: 1 – 5
Delay	0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2), mixer mode only
Scene/Event Memory	32
Operation Mode	Matrix mode/Mixer mode (selector switch)
Auxiliary Function	Key lock function
Control Input/Output	RS-232C*2, D-sub connector (9P, female) Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA, removable terminal block (14 pins) Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block (14 pins) Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or input the DC voltage of 0 to +10 V, removable terminal block (14 pins)
Operating Temperature	–10 to +40°C
Operating Humidity	35% to 80% RH (no condensation)
Finish	Panel: Aluminum, hair-line, black Case: Surface-treated steel plate, black, paint
Dimensions	420 (w) x 107.6 (h) x 395 (d) mm
Weight	11 kg

*1 0 dB = 1 V
*2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

Notes
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- AMX is a trademark of AMX Corporation.
- Crestron is a trademark of Crestron Electronics, Inc.

• Accessories

Power cord (2 m) 1
Rack mounting bracket 2
Bracket mounting screw (M4 x 16) 4
Blank panel 7
Blank panel mounting screw (M3 x 8) 14
Removable terminal plug (4 pins) 1
Removable terminal plug (14 pins) 1
CD-ROM 1
Start guide 1

24.4. A-9060S, A-9120S

Model No.	A-9060S	A-9120S
Power Source	120 V AC, 60 Hz	
Power Consumption	100 W	150 W
Audio Input	Max. 8 channels, modular construction (modules optional) Power amplifier input: 0 dB*1, 10 kΩ, RCA pin jack	
Audio Output		
Preamplifier Output 1	0 dB*1, 300 Ω, unbalanced, RCA pin jack	
Preamplifier Output 2	0 dB*1, 600 Ω, balanced, removable terminal block (3 pins)	
Speaker Output	[Direct] 60 W, 4 Ω, unbalanced, removable terminal block (7 pins)	[Direct] 120 W, 4 Ω, unbalanced, removable terminal block (7 pins)
	[Transformer] 60 W, 8 Ω 25 V & 75 V, balanced, removable terminal block (7 pins)	[Transformer] 120 W, 8 Ω 25 V & 75 V, balanced, removable terminal block (7 pins)
Module Slot	Analog input (slot 1 – 8): –10 dB*1, 10 kΩ, unbalanced Digital input (slot 1 – 4): 24 bit/48 kHz MIX output (slot 1 – 8): –14 dB*1, 330 Ω (CH1 prefader output), unbalanced Digital output (slot 5 – 7): 24 bit/48 kHz Power supply (slot 1 – 8): +24 V, –24 V, +6 V DC	
Digital Audio Signal Reference Level	–20 dB FS	
Power Bandwidth	[Direct] 20 – 20,000 Hz, 0.02% THD [Transformer] 50 – 20,000 Hz, 0.5% THD	
Frequency Response	Power amplifier section: 20 – 20,000 Hz, +0, –1 dB Analog input module to speaker output: 20 – 20,000 Hz, +1, –3 dB	
Total Harmonic Distortion	Power amplifier section: 0.008% (22 kHz LPF, 1 kHz, rated power) Analog input module to speaker output: 0.008% (22 kHz LPF, 1 kHz, rated power)	
S/N Ratio	At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting Output volume min.: 90 dB (preamplifier output) Output volume max.: 61 dB (preamplifier output, input 1 volume: 0 dB, other inputs: OFF) Power amplifier section: 110 dB	
Cross Talk	Over 64 dB (at 20 kHz)	
Tone Control	Bass: ±12 dB (at 100 Hz) Treble: ±12 dB (at 10 kHz)	
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5	
Speaker Equalizer	15 (compatible with TOA speakers only)	
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps	
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps	
Compressor	Depth: 1 – 5	
Delay	0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2), mixer mode only	
Scene/Event Memory	32	
Operation Mode	Matrix mode/Mixer mode (selector switch)	
Auxiliary Function	Key lock function	
Control Input/Output	RS-232C*2, D-sub connector (9P, female) Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA, removable terminal block (14 pins) Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block (14 pins) Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or input the DC voltage of 0 to +10 V, removable terminal block (14 pins)	

Operating Temperature	–10 to +40°C	
Operating Humidity	35% to 80% RH (no condensation)	
Finish	Panel: Aluminum, hair-line, black Case: Surface-treated steel plate, black, paint	
Dimensions	420 (w) x 107.6 (h) x 355 (d) mm	
Weight	11 kg	13 kg

*1 0 dB = 1 V
*2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

Notes
- The design and specifications are subject to change without notice for improvement.
- AMX is a trademark of AMX Corporation.
- Crestron is a trademark of Crestron Electronics, Inc.

• Accessories

Power cord (2 m) 1
Rack mounting bracket 2
Bracket mounting screw (M4 x 16) 4
Blank panel 7
Blank panel mounting screw (M3 x 8) 14
Removable terminal plug (3 pins) 1
Removable terminal plug (7 pins) 1
Removable terminal plug (14 pins) 1
CD-ROM 1
Start guide 1

24.5. A-9240SH

Power Source	120 V AC, 60 Hz
Power Consumption	250 W
Audio Input	Max. 8 channels, modular construction (modules optional) Power amplifier input: 0 dB*1, 10 kΩ, RCA pin jack
Audio Output	Preamplifier output 1: 0 dB*1, 300 Ω, unbalanced, RCA pin jack Preamplifier output 2: 0 dB*1, 600 Ω, balanced, removable terminal block (3 pins) Speaker output: 240 W, 21 Ω, BTL output, removable terminal block (4 pins)
Module Slot	Analog input (slot 1 – 8): –10 dB*1, 10 kΩ, unbalanced Digital input (slot 1 – 4): 24 bit/48 kHz MIX output (slot 1 – 8): –14 dB*1, 330 Ω (CH1 prefader output), unbalanced Digital output (slot 5 – 7): 24 bit/48 kHz Power supply (slot 1 – 8): +24 V, –24 V, +6 V DC
Digital Audio Signal Reference Level	–20 dB FS
Power Bandwidth	20 – 20,000 Hz, 0.008% THD
Frequency Response	Power amplifier section: 20 – 20,000 Hz, +0, –1 dB Analog input module to speaker output: 20 – 20,000 Hz, +1, –3 dB
Total Harmonic Distortion	Power amplifier section: 0.0008% (22 kHz LPF, 1 kHz, rated power) Analog input module to speaker output: 0.008% (22 kHz LPF, 1 kHz, rated power)
S/N Ratio	At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting Output volume min.: 90 dB (preamplifier output) Output volume max.: 61 dB (preamplifier output, input 1 volume: 0 dB, other inputs: OFF) Power amplifier section: 110 dB
Cross Talk	Over 64 dB (at 20 kHz)
Tone Control	Bass: ±12 dB (at 100 Hz), Treble: ±12 dB (at 10 kHz)
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5
Speaker Equalizer	15 (compatible with TOA speakers only)
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps
Compressor	Depth: 1 – 5
Delay	0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2), mixer mode only
Scene/Event Memory	32
Operation Mode	Matrix mode/Mixer mode (selector switch)
Auxiliary Function	Key lock function
Control Input/Output	RS-232C*2, D-sub connector (9P, female) Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA, removable terminal block (14 pins) Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block (14 pins) Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or input the DC voltage of 0 to +10 V, removable terminal block (14 pins)
Operating Temperature	–10 to +40°C
Operating Humidity	35% to 80% RH (no condensation)
Finish	Panel: Aluminum, hair-line, black Case: Surface-treated steel plate, black, paint
Dimensions	420 (w) x 107.6 (h) x 395 (d) mm
Weight	11 kg

*1 0 dB = 1 V
*2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

Notes
- The design and specifications are subject to change without notice for improvement.
- AMX is a trademark of AMX Corporation.
- Crestron is a trademark of Crestron Electronics, Inc.

• Accessories

Power cord (2 m) 1
Rack mounting bracket 2
Bracket mounting screw (M4 x 16) 4
Blank panel 7
Blank panel mounting screw (M3 x 8) 14
Removable terminal plug (3 pins) 1
Removable terminal plug (4 pins) 1
Removable terminal plug (14 pins) 1
CD-ROM 1
Start guide 1

24.6. Optional Modules

24.6.1. D-001T

Power Source	+24 V DC, –24 V DC, +6 V DC
Current Consumption	20 mA (at +24 V DC), 20 mA (at –24 V DC), 60 mA (at +6 V DC)
Input	2 channels, 3 kΩ (when the phantom power is ON) / 10 kΩ (phantom power is OFF), electronically-balanced, removable terminal block (3 pins)
Input Sensitivity	–60, –54, –48, –42, –36, –30, –24, –18, –10 dB* (selectable)
Frequency Response	20 – 20,000 Hz +1, –3 dB
Total Harmonic Distortion + N	0.008% (at 1 kHz, 20 – 20,000 Hz BPF, Input sensitivity: –10 dB)
Input Equivalent Noise	Under –112 dB (at 20 – 20,000 Hz BPF, Input short, Input sensitivity: –60 dB)
S/N Ratio	Over 73 dB (at 20 – 20,000 Hz BPF, Input short, Input sensitivity: –10 dB)
Cross Talk	Over 75 dB (at 20 kHz, Input sensitivity: –10 dB)
CMRR	Over 62 dB (at 1 kHz, Input sensitivity: –60 dB)
A/D Converter	24 bit ΔΣADC
Sampling Frequency	48 kHz
Tone Control	Bass: ±12 dB (at 100 Hz) Treble: ±12 dB (at 10 kHz)
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps
Compressor	Depth: 1 – 5
Phantom Power	+24 V DC
Operating Temperature	–10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	82 g

* 0 dB = 1 V

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (3 pins) 2
Machine screw M3 x 8 2

24.6.2. T-001T

Power Source	+24 V DC, –24 V DC, +6 V DC
Current Consumption	35 mA (at +24 V DC), 35 mA (at –24 V DC), 60 mA (at +6 V DC)
Output	2 channels, max. +20 dB* (at 10 kΩ load), 600 Ω, electronically-balanced, removable terminal block (3 pins)
Frequency Response	20 – 20,000 Hz +1, –3 dB
Total Harmonic Distortion + N	0.005% (at 1 kHz, 20 – 20,000 Hz BPF, 5 V output, 10 kΩ load)
S/N Ratio	Over 73 dB (at 20 – 20,000 Hz BPF)
Residual Noise	Under –91 dB (at 20 – 20,000 Hz BPF, VOL: –70 dB)
Cross Talk	Over 87 dB (at 20 kHz)
D/A Converter	24 bit ΔΣDAC
Sampling Frequency	48 kHz
Tone Control	Bass: ±12 dB (at 100 Hz) Treble: ±12 dB (at 10 kHz)
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5
Speaker Equalizer	15 (compatible with TOA speakers only)
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps
Compressor	Depth: 1 – 5
Delay	0 – 40 ms (1 ms step), maximum 40 ms (CH1 + CH2), mixer mode only
Operating Temperature	–10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	82 g

* 0 dB = 1 V

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (3 pins) 2
Machine screw M3 x 8 2

24.6.3. C-001T

Power Source	6 V DC
Current Consumption	15 mA
Control Input	8 channels, open voltage: 3.3 V DC, short-circuit: under 1 mA, removable terminal block (9 pins)
Control Output	8 channels, open collector output, withstand voltage: 27 V DC, control current: max. 50 mA, removable terminal block (9 pins)
Operating Temperature	–10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	62 g

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (9 pins) 2
Machine screw M3 x 8 2

24.6.4. ZP-001T

Power Source	+24 V DC, +6 V DC
Current Consumption	38 mA (at +24 V DC), 18 mA (at +6 V DC)
Number of Lines	1 line
Type of Selectable Signal	DTMF signal
Signaling System	Loop-Start (or Ground-Start, selectable)
TEL Line	0 dB, 600 Ω, balanced, RJ-11 connector/removable terminal block (4 pins)
Control Input	1 channel, no-voltage make contact, open voltage: 5 V DC, short-circuit: 0.5 mA, removable terminal block (4 pins)
Control Output	4 channels, open collector output (isolated), withstand voltage: 35 V DC, control current: max. 50 mA, removable terminal block (4 pins)
Operating Temperature	–10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	153 g

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (4 pins) 3
Machine screw M3 x 8 2

24.6.5. AN-001T

Power Source	+24 V DC, –24 V DC, +6 V DC
Current Consumption	20 mA (at +24 V DC), 20 mA (at –24 V DC), 60 mA (at +6 V DC)
Input	Sensor input (Ambient noise sensor microphone input): 2 channels, 3 kΩ (when the phantom power is ON)/10 kΩ (when the phantom power is OFF), electronically-balanced, removable terminal block (3 pins)
Input Sensitivity	–60, –54, –48, –42, –36, –30, –24, –18, –10 dB* (selectable)
Phantom Power	+24 V DC
A/D Converter	24 bit ΔΣADC
Sampling Frequency	48 kHz
Ambient Noise Control Function	Sensor input reference level adjustment function Maximum output signal level control: –15 to 0 dB Minimum output signal level control: –18 to – 3 dB Sample time setting: 10 s, 15 s, 20 s, 30 s, 1 min, 2 min, 3 min, 5 min Gain ratio setting (Ambient noise to Output signal level): 6:3, 5:3, 4:3, 3:3, 3:4, 3:5, 3:6, 6:–3, 5:–3, 4:–3, 3:–3, 3:–4, 3:–5, 3:–6
Operating Temperature	–10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	82 g

* 0 dB = 1 V

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (3 pins) 2
Machine screw M3 x 8 2

24.7. Optional Accessories

24.7.1. AN-9001

Type	Electret condenser microphone
Phantom Power	14 – 26 V DC
Current Consumption	7 mA (at 24 V DC)
Directivity	Omnidirectional (hemispherical)
Impedance	200 Ω
Rated Sensitivity	–5 dB (1 kHz, 0 dB = 1 V/Pa)
Frequency Response	100 – 10,000 Hz
Output Terminal	Removable terminal block (3 pins)
Operating Temperature	–10 to +40°C
Finish	Panel: ABS resin, white Frame, Case: Surface-treated steel plate
Dimensions	ø130 x 37 (d) mm
Weight	170 g

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (3 pins) 1
Machine screw No. 6-32 UNC x 30 2
Machine screw M4 x 30 2

24.7.2. ZM-9001

Applicable Cable	2-core twisted pair cables
Line Resistance	Under 100 Ω (loop)
Terminal	M3 screw terminal, distance between barriers: 7.62 mm
Operating Temperature	–10 to +40°C
Finish	Surface-treated steel plate, white, paint
Dimensions	72 (w) x 127 (h) x 45 (d) mm
Weight	170 g

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Machine screw (for box mounting) No.6-32UNC x 30 2
Machine screw (for panel mounting) No.6-32UNC x 6 2

24.7.3. ZM-9002

Applicable Cable	2-core twisted pair cables
Line Resistance	Under 100 Ω (loop)
Terminal	M3 screw terminal, distance between barriers: 7.62 mm
Operating Temperature	–10 to +40°C
Finish	Surface-treated steel plate, white, paint
Dimensions	72 (w) x 127 (h) x 56 (d) mm
Weight	170 g

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Machine screw (for box mounting) No.6-32UNC x 30 2
Machine screw (for panel mounting) No.6-32UNC x 6 2